
Can electronic marketing systems offer any competitive benefits to peripheral fishing communities?

*a study supported by funding from
DG XIV of the European Commission*

by

Nautilus CONSULTANTS, UK

&

Archipel, France

March 1997

Nautilus CONSULTANTS
30/6 Elbe Stree
Edinburgh EH6 7HW
Scotland

tel +44 131 555 0660
fax +44 131 554 5902
e-mail mail@nautilus-consultants.co.uk

ARCHIPEL G. I. E
1 Avenue du Braden
29000 Quimper
France

tel +33 98 90 88 94
fax +33 98 90 88 94

editor and compiler

Crick Carleton

consultancy inputs

***Nautilus* CONSULTANTS**

Crick Carleton

Alasdair Steele

Sarah Skerret

Sarah Jewell

Archipel

Jean-Pierre Pennober

Regis Heland

Marie-Christine Montfort

The points of view and the conclusions of the report are the responsibility of the authors, and this study does not necessarily reflect the views of the Commission of the European Communities.

Reproduction in part or in whole of the contents of this report is conditional on the specific mention of the source.

Table of Contents

1. Introduction	0
1.1 The evolution of electronic trading systems	0
1.2 Overview of the study.....	2
2. Background	4
2.1 Peripherality and un-competitiveness.....	4
2.2 Spatial dimensions of the European fishery industry	5
2.3 Predisposition to electronic marketing systems	7
2.4 Quality over quantity.....	8
2.5 The market-place.....	10
2.6 Competitive advantage	10
3. Electronic trading systems - the technology	11
3.1 Introduction.....	11
3.2 The problem of remoteness	12
3.3 Basic set of electronic marketing systems	12
4. Electronic Marketing in Practice	16
4.1 Introduction.....	16
4.2 Example 1 - A hub system for the marketing of white fish.....	17
4.3 Example 2 - Future electronic marketing of live crab.....	21
4.4 Example 3 - The marketing of live bivalves.....	24
5. Attitudes to change	32
5.1 Introduction.....	32
5.2 Survey results.....	33
6. Conclusions	37

Appendix: Examples of current application in France.

1. Introduction

1.1 The evolution of electronic trading systems

The concept of selling highly perishable products through electronic marketing systems, although relatively new, is now well established as a means of increasing the potential client base for such product, and as a means of increasing market efficiency. Examples where electronic systems are employed in the wholesale trading in perishable commodities are to be found in most countries in Europe. For example, in Scotland, both milk and livestock are sold through electronic auctions, while Holland and France employ similar systems for the sale of flowers and vegetables.

Application of such systems to the fishery sector is also now commonplace in Continental Europe - French examples include Cherbourg, La Rochelle, La Turballe, Le Croisic and Dunkerque. The pace of change in the application of such systems is evident in the recent establishment of an electronic trading system linking traders in Zeebrugge, IJmuiden, and Egersund for the sale of one day old fish - the last day's catch of a fishing trip¹. Elsewhere, industry interests in Iceland, Norway and Holland are each exploring the feasibility of establishing nation-wide electronic auction networks². Until very recently, interest in such systems from the fishery industries in Britain and Ireland has been notable by its absence. Table 1 gives an indication of the extent to which electronic marketing systems have penetrated the first-hand sale of seafood within Western Europe.

The evolution of the application of such systems to the fishery industry in France, where experience goes back some twelve years, is now moving on from general acceptance of on-market electronic clock bidding. Systems being actively explored or installed at French ports include:

- the use of remote bidding - from nearby offices, and further afield;
- the electronic linking of two, three or four port auctions;
- the provision of advanced information on landings; and
- the integration and dissemination of such information so as to facilitate the instigation of short notice promotional campaigns in multiple and independent retail stores, allowing the profitable absorption of unusually high landings, and thus reducing the incidence where Producer Organisations (POs) have to withdraw fish from auction.

At the outset of this study, no concrete exploration of the application of electronic marketing systems to the fishery industries of the UK and Ireland (covering Scotland, England, Wales, Northern Ireland and the Republic of Ireland) had taken place. Now, at the end of this study, Highland Council, the local government body covering the North West of Scotland, has commissioned a feasibility study concerning application of electronic marketing systems to the ports of Lochinver and Kinlochbervie, two of several ports under its management, and the Irish Fish Producers Organisation (IFPO) has commissioned an exploratory study as to how electronic marketing could be applied to the port of Howth, Dublin³.

Interestingly, and indicative of the critical importance of "the people dimension" in respect of innovation within this industry, the well publicised rejections of electronic systems by the fishery industries in Grimsby and Peterhead, two of the UK's main fishing centres, discouraged others from exploring such development avenues. In a similar way, the recent initiatives in Scotland and Ireland are already encouraging others to re-examine the role of this technology.

Table 1 - Use of electronic marketing systems in the first hand sale of fish

¹ Since drafting this report, we understand that linkage may shortly be extended to the French port of La Rochelle.

² A further development of this interest in national systems was the initiation in mid 1996 of the INFOMAR project, which is looking to develop a pan-Europe umbrella electronic information and trading system, accessible at any time from land or sea. Funded by DGIII of the European Commission, the project aims to provide an information, forecasting and trading system for the European fresh fish industry. The pilot system is under development by commercial interests in Iceland, Norway, the UK, Belgium, Holland and France.

³ More recently still, a number of other ports in Scotland, England and Wales are actively examining the potentials offered by application of electronic marketing technology.

	location	operator	supplier	type of system	status
Iceland					
	Reykjavik	Fiskmarkadurinn HF	Schelfhout	inter-connected	study
	Hafnarfjordur	Fiskmarkadurinn HF	Schelfhout	inter-connected	study
	Fjarddar HF	Fiskmarkadur Breida-Fjarddar HF	Schelfhout	inter-connected	study
Norway					
	Tromso	Norges Rafisklag	Schelfhout	remote	operational
	Bergen	Norges Sileslag	Schelfhout	remote	operational
	Alesund	Sunnmore og Romsdal	Schelfhout	remote	operational
	Maloy	Vest-Norges Fiskesalgslag	Schelfhout	remote	operational
	Eggersund			remote	operational
Denmark					
	Esbjerg			remote	operational
The Netherlands					
	Urk	Visafslag Urk	Schelfhout	remote	operational
	Lauwersoog	Visafslag Lauwersoog	Nieaf-Smitt		operational
	Yerseke				operational
	Den Helder	Visafslag Den Helder	Schelfhout	remote	operational
	Ijmuiden	Zeehaven Ijmuiden	Schelfhout	remote	operational
	Scheveningen	Visafslag Scheveningen	Nieaf-Smitt	remote	operational
Belgium					
	Zeebrugge	Zeebrugge Visveiling	Schelfhout	remote	operational
Scotland					
	Kinlochbervie	Highland Council	Schelfhout	remote	study
	Lochinver	Highland Council	Schelfhout	remote	study
Ireland					
	Howth	BIM / IFPO	Schelfhout	local	study
France					
	Dunkerque	Criee de Dunkerque	Schelfhout	local	operational
	Port en Bessin		Iktus	remote	operational
	Cherbourg	Marche en Gros	Schelfhout	remote	operational
	Granville		Iktus	local	operational
	Erquy		Iktus	local	operational
	Saint Quay Portrieux		Iktus	local	operational
	Le Guilvenic	Criee du Guilvenic	Schelfhout / Iktus	local	operational
	Cornouaille	CCI de Quimper	Schelfhout / Iktus	inter-connected	study
	Lorient			local	operational
	La Turballe	Criee de la Turballe	Schelfhout	local	operational
	Le Croisic	Criee du Croisic	Schelfhout	local	operational
	La Rochelle	Halle a Maree	Schelfhout	remote	operational
	La Cotiniere		Control Data/ Iktus	local	operational
	Archachon			local	operational
	Sete				operational
Spain					
	Cadiz	Arcomar	Schelfhout	local	operational

[NB During our research we have come across three companies whose systems are clearly applicable to the electronic trading of fish. These are Agro Marché International⁴ of France, Nieaf Smitt of Holland and Schelfhout of Belgium.]

This report provides a résumé of industry experience to date, sufficient to help industry leaders and managers to come to grips with the technologies involved and, more importantly, to assess

⁴ At the turn of the year 1996/97, ownership of Service Agro - which had formerly developed and marketed the Datapeche and Iktus electronic information and auction systems - transferred to Agro Marché International.

the strategic imperatives behind adoption of new trading systems, and to assess the extent to which the natural resistance to change is likely to dictate both system design and the speed at which systems can be upgraded.

Electronic marketing systems will not be suited to every port or industry situation, but they can be used to establish and sustain competitive advantage, and to increase the local retention of economic benefits resulting from such trade. There is nothing magical about electronic marketing systems. They cannot replace sound industry practice and basic marketing and trading skills. What they offer is the substantial enhancement of the impact of such skills and practices and, through modern computing and communications technologies, reduce some of the inefficiencies that distance places on traditional trading systems.

Installing an electronic clock auctioning system on a market could be easily achieved within two years from concept to operation. So saying, adoption of electronic trading practices that incorporate features, and benefits, beyond those that simply mimic current "shout" auction practices, cannot be achieved over-night - they could reasonably be expected to take as long as ten years, as has been the case of many French ports. Although in some instances - in the sale of some aquaculture products, very fresh high value fish, and maybe some discrete corners of the mollusc or crustacean trades - a time horizon of some four or five years for the adoption of such changes could be considered feasible.

What the findings of the study do indicate is that where electronic marketing systems have been applied within the fishery sector, they have been applied as part of a port's longer-term marketing and development strategy. What such application has led to is:

- greater market access;
- the raised commercial profile of the port;
- a greater sense of responsibility for the future development of the port;
- improved levels of co-operation between ports users;
- improved information flows between port operators - skippers, market managers, merchants - and the distributive trades - hauliers, wholesale distributors, multiple retailers, caterers.

The wide-spread introduction of electronic trading systems in the fishery industries of Continental Europe lies in stark contrast to their lack of application in the industries of the UK and Ireland. The implications for the UK and Ireland are that, whether through the use of electronic marketing systems, or through other mechanisms, if the industries do not rapidly secure their channels of access to their prime long-term markets in Continental Europe, and bind into such channels a range of Continental intermediaries, then Continental traders will establish forward bases in the UK and Ireland - a process that is already underway.

The economic opportunities presented by proximity to prime scarce marine resources will then waste away as Continental trading interests establish their own supply channels, setting-up businesses owned, operated and controlled by themselves. Resistance to change on the part of the industry in Britain and Ireland, not least in the introduction of electronic marketing systems that Continental ports have clearly found beneficial in establishing competitive advantage, is hastening the day when Continental-based investment in the British and Irish industries will be the norm rather than the exception.

1.2 Overview of the study

1.2.1 Study objectives

This report is the result of a study, conducted over a period of 12 months, into various forms of electronic marketing and their current and future application within the fishery industry, and specifically within *peripheral communities highly dependent on fisheries*. The study has been funded by the Directorate General for Fisheries - DG XIV - of the Commission of the European Communities, as part of its programme of studies in support of the Common Fisheries Policy. The findings of the study are in the public domain, and their wide distribution, within the fishery industry and amongst those decision-makers associated with the development of the sector, is actively encouraged.

The study is specifically focused on the benefits, if any, that electronic systems can offer to the fishery industry in peripheral areas of Europe. The benefits of introducing electronic marketing systems have been typically promoted in terms of how they can improve the efficiency of operation of **large markets** dealing with **large volumes** of relatively **standard and homogenous products**. But can the same, or modified, systems offer benefits to **smaller ports and fishing communities**, where **low volume, small scale**, and **geographical isolation** typically preclude participation in the wider market, unless on disadvantageous terms?

This concentration on peripherality has focused our attention on some of the more extreme marketing puzzles to be found within the industry, and particularly on the pivotal role of individuals in the processes of innovation. It has also focused our attentions on the factors that underlie decision-making within the seafood trade - competitive advantage, scale and the power that access to, let alone control over, information can offer in securing such advantage. This is at the heart of what electronic marketing systems can and cannot do for the industry.

Our research has sought to provide answers to two specific questions:

do electronic marketing systems present advantages over more conventional systems?

and

are they likely to impact on the structure and organisation of Europe's fish markets in the medium term - say the next ten years?

Subsidiary areas of interest, where we have sought to identify answers, include such questions as:

- is the introduction of electronic marketing systems something to be encouraged - by the industry / by the administrators of the industry?
- do electronic marketing systems offer improvements in the way that fresh fish is marketed and distributed within a European context?
- are the current systems employed in the fishery sector compatible with the introduction of electronic marketing systems?
- what role might electronic systems play in the future development of the industry - at a local level, at a regional level, at a national level and at a European level?
- what steps need to be taken to bring about the incorporation of such systems into the normal operations of the industry?
- who are likely to be the winners, and who the losers, in the adoption of such systems?

1.2.2 Peripherality

The concept of **cohesion** requires that European Union member states look closely at the status of economic and socio-economic development throughout Europe, but particularly in disadvantaged areas (as found in areas that comply with EU definitions of peripherality), and seek, where appropriate, to actively promote improvement. The concept of **subsidiarity**, applied broadly, requires that decisions in respect of resource allocations be taken at the smallest geographical scale that is administratively appropriate. Together, one of the most difficult, and sensitive, applications of such concepts lies in the **peripheral areas** of Europe.

Consideration of the role of electronic marketing systems provides a valuable contribution to this debate. Electronic marketing systems do not just affect the way that fish and marine products in general are channelled through the marketing chain; they impact on the whole production process, and the way that the production process is managed. They impact on fleet distribution, on-board handling, systems of resource ownership, quota and effort management, the transparency of catching, landing and trading disclosures, and the fishing and cultivation methods employed. For example:

-
- Giving accurate advance notification of landing to port / market authorities is not possible if the boats concerned are carrying over-quota or under-sized fish - at least if this same information is available to regulatory authorities.
 - Remote bidding systems cannot work effectively without the employment of accurate and consistent grading systems.
 - Skippers and vessel owners will be put off landing fish to ports where the product is sold unseen under a remote bidding regime, if the price is subsequently down-graded due to actual or proclaimed unreasonable deterioration during distribution to the purchaser; they will prefer to land to ports using a "sale as seen" system, where no subsequent alteration of agreed price is possible.

1.2.3 Study areas

As a test-bed for our investigations, and the application of our findings, we have chosen peripheral areas of France, Scotland and Ireland, since they share common fishery production features, but show strong divergence in marketing structures, infrastructure, distance from markets, and crucially knowledge of, and investment in, electronic marketing systems. Early researches confirmed our choice of areas.

The main areas studied are the Atlantic coast of France (southern Normandy, Brittany and south west France), the Highlands of Scotland, and the South and West of Ireland.

The areas chosen for study represent contrasting aspects of fishery industry development, especially in respect of the potential application of electronic marketing systems. Each of the areas studied has a peripheral location within its respective country, has an economy highly dependent on fisheries, and is identified as being economically peripheral in the context of the European Union. Industry organisations and local administrations in these areas have been supportive of the consultants' work, and have shown strong interest in the subject area.

2. Background

2.1 Peripherality and un-competitiveness

The basic problems that peripheral areas, highly dependent on fisheries, suffer from are ones of scale and location. Ports may continue to prosper due to proximity to the fishing grounds, but the relatively small scale of the communities supporting this industry, coupled with distance from the main consumer markets, and further exacerbated by poor infrastructure, means that the number of buyers in the local markets is limited. This results in lower and more volatile prices than at the more centrally located ports, as well as a great deal of the catch being consigned directly by road, with the resultant loss of benefits to the local economy.

This tendency towards marginalisation of such communities has been further exacerbated by European Union and national governments' policies which encourage the centralisation of the industry and its structures, most particularly around a limited number of ports. This has had major impact on the conformation of the industry, on its associated demography, and on capital flows within the industry. It has also had major repercussions in respect of the competing interests of those parts of the fleet that can only exploit inshore waters, those that can only exploit near waters (inshore and coastal), and those that can exploit middle distance and distant waters (including coastal, and sometimes inshore, waters), many of the impacts of which have yet to be fully established.

By quantifying and qualifying such impacts, it has been possible to successfully argue for increased support to these sections of the industry, both to strengthen the positions of such communities in fishery industry terms, and to alleviate some of the more serious repercussions of such industry developments. Yet in most cases of peripherality, whilst the fragility of the local economy, and the changing socio-economic structures that support it, are un-deniable, it is unacceptable to promote the case for the development of sustainable local economies based on long-term subsidy and external support - leading to the establishment of aid dependency. Such economies have to remain competitive in their own rights.

Many factors go to the establishment of sustainable local economies, not least the policy environments in which they are expected to operate. With the changing cultural make-up of such communities, changes in people's aspirations, and massive improvements in physical and electronic communications, it is no longer possible for such local economies to be, or to seek to be, self-sufficient (a state existing only in distant memory). A key factor in achieving sustainable development is the ability of such communities to gain profitable access to distant markets for the sale of locally produced goods and services. It is in this context that this study has been designed.

2.2 Spatial dimensions of the European fishery industry

The geographical and spatial dimensions of the industry under-pin why electronic marketing might improve the competitiveness of producer communities on the periphery of Europe.

Resource: Key features are the vast expanse of continental shelf to the west of the Britain and Ireland, the shallow offshore banks of the Porcupine Bank, the Rockall Bank, Rosemary Bank, and the Wyville-Thomson Ridge, and the deeper oceanic waters to the north west and south west of the land masses. Iceland sits astride the mid-Atlantic ridge, the ridge that separates the principal tectonic plates of the Atlantic. Fishing communities and industry infrastructure located on the western coasts of the UK and Ireland are strategically located in respect of access to these western fishery resources. For more coastal and inshore resources, the geologies of the west coasts of Scotland, Ireland, South West England and Brittany share many common features, and support common marine ecologies.

Fishery dependency: Indicators of peripherality and fishery dependency, are indicated in the tabulation below, which gives rough indications of dependency, based on the socio-economic studies completed in 1993.

Statistical indicators of fishery dependency (1989/90)

	<i>tot. pop.</i> (<i>'000s</i>)	<i>workforce</i> (<i>'000s</i>)	<i>no in jobs</i> (<i>'000s</i>)	<i>GDP total</i> (<i>ECUm</i>)	<i>GDP per capita</i> (<i>ECU</i>)
<i>South West Ireland</i>	107.0	38.0	32.0	1,006	9,371
<i>Highlands of Scotland</i>	138.7	78.2	72.9	1,457	10,505
<i>Cornouaille</i>	264.1	110.5	98.4	3,525	13,350
	<i>employ. fishermen</i>	<i>employ. aquaculture</i>	<i>employ. processing</i>	<i>employ. services</i>	<i>employ. total</i>
<i>South West Ireland</i>	1,201	580	89	200	1,990
<i>Highlands of Scotland</i>	946	727	383	303	2,361
<i>Cornouaille</i>	4,245	200	3,625	2,768	10,838
	<i>added value first hand</i> (<i>ECU '000s</i>)	<i>added value aqua</i> (<i>ECU '000s</i>)	<i>added value services</i> (<i>ECU '000s</i>)	<i>added value total</i> (<i>ECU '000s</i>)	
<i>South West Ireland</i>	24,500	10,000	2,400	37,000	
<i>Highlands of Scotland</i>	13,420	10,976	7,060	31,450	
<i>Cornouaille</i>	220,306	5,511	104,292	330,110	
	<i>employ. dependency catch</i>		<i>econ. dependency catch</i>		<i>quota value</i>
	<i>tot</i>	<i>tot</i>	<i>tot</i>	<i>tot</i>	<i>value</i>
	(<i>%</i>)	(<i>%</i>)	(<i>%</i>)	(<i>%</i>)	(<i>%</i>)
<i>South West Ireland</i>	3.8	6.2	2.4	3.7	78.0
<i>Highlands of Scotland</i>	1.3	3.2	0.9	2.2	75.4
<i>Cornouaille</i>	4.3	11.0	6.2	9.4	69.5

Some indication of difficulties in linking seafood resources, seafood producers, and ultimate consumers into one efficient and integrated system is described below.

Production: The following species are of particular economic importance in respect the areas under study. Key features to look at are the spread of which countries fish which resources. The following comments are relevant:

-
- In terms of markets, of the gadoids, haddock is most popular in Scotland, cod in England, hake in Spain, and whiting in France; hake and whiting are of particular relevance within the areas under study.
 - Monkfish is popular throughout Europe, but is a part of the traditions of France and Spain, where it still tends to command the highest prices.
 - Megrim was until relatively recently discarded by all but the Spanish fleet; today it forms an important component of landings and trade from Ireland, England and France to the Spanish market.
 - The traditional markets for nephrops are Spain and Italy, and to a lesser extent France. In recent decades, the UK has become important, tending to favour breaded scampi. Significant fisheries are prosecuted by the French, Italians, Irish, and French, Spanish, and Danish. But over-shadowing all are the UK fisheries, of particular importance in Scotland, Northern Ireland and northern England.
 - Edible crab is a fishery of the colder rocky shores of the UK and Ireland and the adjacent coastlines of France (Normandy and Brittany), with prime markets being France and Spain.
 - Bottom grown mussel fisheries are of importance in a number of countries, with consumption concentrated in Belgium, France, Holland, Spain and Italy.

Many of the highly dependent fishery communities of Scotland, Ireland and France share common fisheries - high value white fish (cod, haddock, hake, whiting, and monkfish), flatfish (megrim), crustaceans (nephrops, edible crab, spider crab and velvet crab), and molluscs (scallops), and common aquaculture industries (mussels, oysters and salmon).

Distribution of consumption and spending power: As to the Western European markets for fish and fish products, three contrasting indicators are instructive. A comparison of population distribution and GDP per inhabitant, by small regions of the European Union, shows up three distinct types of market.

Population distribution and GDP per inhabitant, by region, are at their highest in the regions of South East England, the Benelux countries, Germany and Italy. These are areas where expenditure on highly processed and convenience foods is particularly high, but the in-home consumption of high quality fresh wet fish and shellfish is generally low. Expenditure on eating out is high, where high quality fresh ingredients are particularly prized.

The extremities of the UK and Ireland, the Iberian peninsula, southern Italy and Greece, are where both population density and per capita GDP are particularly low. These are the primary peripheral areas of the European Union, where food consumption trends tend to favour unprocessed fresh and frozen produce.

Anomalous areas are those where there is low population density, but high GDP per inhabitant. Here, there is a growing market for processed fresh and frozen seafood products, which competes with a more traditional market for high value live and wet fresh fish and their immediate derivatives.

If this sort of pattern is then compared with the distribution of fish consumption, by volume (based on a multiple of national consumption figures an index of population density), some interesting features stand out. The areas of highest consumption are to be clearly found in France, Spain and Portugal, with localised concentrations around London, Frankfurt and Milan. Consumption in or adjacent to the production areas in Scotland and Ireland is mediocre or low. This sort of distribution is supportive of our contention that the most important markets for consistently high volumes of high quality live and fresh primary processed wet seafood produce are in France and Spain. The richer areas of northern Europe are particularly important markets for high value convenience products and high added value products.

Transport: For smaller scale producer systems in the peripheral parts of Ireland, Scotland and France, prime target markets are in France, Spain and Portugal. Yet the dislocations between producer and consumer are considerable.

Using road traffic volume as an indicator of transport infrastructure, as one might expect, traffic flows closely follow population density and GDP per capita. Traffic flows in respect of the key areas of interest in getting high quality fresh seafood produce from producer to prime market -

Ireland, Scotland, western France, Spain and Portugal - are comparatively low, and this state of affairs tends to be reflected in the quality of accompanying roads infrastructure. Getting produce from Ireland, Scotland and Brittany to markets in western France, Spain and Portugal is not easy.

In addition, an exercise undertaken by "Europe 2000 - Cooperation for European Territorial Development" projected likely improvements in the availability of high speed train services across Europe, as an indicator of how accessible different areas of Europe might be. This showed quite clearly that, over time, access within mainland Europe would be much enhanced, making Spain and Portugal considerably more accessible to the heartland of Europe than is the case today. Conversely, Ireland and Scotland would remain peripheral in the context of accessibility, with little change in ease of access over that evident today.

The trade and economic development consequences of such increased relative isolation are not good. To remain competitive, the achievement of improved efficiencies by which produce is traded with, and subsequently delivered to, prime target markets, needs to take on greater urgency. This is not just an argument for an improvement in the way that entrepreneurs conduct their business, but a requirement for long-term strategic planning, and structural change in how business is conducted.

In support of electronic marketing systems: Ireland and northern Scotland are both highly dependent on fishing, and severely disadvantaged in terms of physical access to their prime markets for fresh and live high value seafood products - primarily France, Spain and Portugal, but also centre west and south west Germany. Whilst there is little that can be done about the actual physical distance of these production areas from their markets, there is much that can be done in minimising the delays experienced in getting product from production area to market. Electronic marketing systems might be expected to assist in this matter.

Exploiting many of the same fisheries as the industries in Scotland and Ireland, and located close, but still peripheral, to the prime markets of France and Spain, the fishery industries of Normandy and Brittany are key competitors in this valuable market. Many of the ports of this area have already embarked on the use of electronic marketing systems as a means of securing competitive advantage in this key market. Thus, does the French experience in the introduction of the evolution of electronic marketing systems have anything to offer the industries in Scotland and Ireland? In all likelihood, it must do, both as a competitor industry, and as an industry that will continue to seek to source, and act as a conduit for, raw material from fishing ports and production areas located on the west coasts of England, Scotland and Ireland.

2.3 Predisposition to electronic marketing systems

The contrasts in the way that electronic marketing techniques have evolved in different European countries, appears to be linked to under-lying cultural affinities, exposure to technologies, and attitudes to change.

Exposure to technology: The Dutch auction and its subsequent automation was developed in Holland around the turn of the century. This historical exposure to the systems involved goes a long way to explaining the relative ease with which electronic auction systems are being broadly applied within the Dutch fishing industry (though there continues to be resistance to the implementation of a national inter-connected auction system, linking all Dutch fishing ports within the one system). The time-scale over which such technology is introduced to an industry is telling. Getting the time right is important.

In this respect, it is interesting to note that fishery businesses located in the ports of Egersund (Norway), Ijmuiden (the Netherlands) and Zeebrugge (Belgium) have recently come together to offer a remote bidding facility for the sale of one day old fish. The inference here is that these businesses consider that first quality fish can command a consistently higher price on the market than at present, and that this trade can be better served by ensuring that interested parties have access to a consistent source of supply - facilitated by a sort of electronic groupage system. If this supposition had been true say a year ago, or ten years ago, such a sales system would have been developed before. That this is happening now supports our own supposition that the heightened perception of the finite nature of the fishery resources being exploited, together with concerns about sustainable exploitation techniques and about the

safety and quality of prime foods, is causing consumers to reassess the quality of the seafood they wish to eat, and encouraging a small proportion of those with sufficient disposable income to pay more for guaranteed qualities of freshness and wholesomeness of fish.

The French experience of electronic marketing is different. Whilst the ideas behind the systems may be the same, the French systems are home grown, and tend towards the use of telematics (a Prestel or Minitel type system screen based information access). This is an area of information technology that has been particularly championed by the French, and which has been successfully sold to the French public. Today, every subscriber to France Telecom is provided with a Minitel screen and consul, providing access to an electronic telephone directory. In addition to this exposure to interactive computing technology, the seeking after both intellectually and practically neat solutions to problems has a long provenance in France, and it is, in part, to this constant quest for improvement that we ascribe the development of electronic marketing systems for both large and smaller French ports. In the example of France, it is interesting that system development is now being progressed through linkages between French and outside specialists.

In the UK and Ireland there is little appetite for technology within the fishing sector, though resistance to technological solutions may be less within the aquaculture industry, and particularly the salmon industry. In addition, the geography and culture of these islands has not only ensured physical insularity, but has also sustained attitudes of "them and us". The fishery industries of mainland Europe view access to the fishery resources to their west as of immense strategic importance, and a major component of an integrated economic system geared to meeting market demand. By contrast, one is all too often left with the impression from British and Irish operators that by rights they should have monopoly control over the harvesting of such resources, and that the market should be glad to get what it can, regardless of the quality of product offered, and the timeliness of its delivery. The basic attitudes of the mainlanders and islanders are very different.

Industry organisation: In terms of industry organisation, the Norwegian, Dutch, Belgian and French industries, despite their fair share of internal conflicts between special interest groups, between ports, and between producer, wholesaler and processor, seem to be able to see the bigger picture in a way that is rarely if ever achieved in the UK or Ireland. Accordingly, industry planning and development in these industries has a more professional and strategic feel to it, and indeed, this seems to be reflected in the type of professional structures associated with the industry, and the type of people employed to lead and support these structures.

As can be seen from the case studies described in some detail in the appendix, achieving consensus is by no means an easy matter. There have been many false or hesitant starts, but the overall impression is of an industry, or industry components, seeking to adapt to the requirements of the market for their produce, and seeking to establish and secure advantage in a highly competitive, and complex, supply situation. At the surface, short-termism rules just as much as in the UK and Ireland, but it is constrained by underlying longer-term goals which all members of the industry recognise and support.

2.4 Market supply

The last twenty to twenty five years have seen a massive internationalisation of the seafood trade, a revolution in the way that fresh and frozen, live and processed fish and shellfish is brought to market. Local supplies are no longer sufficient to meet the demand for product, as demand has outstripped the quantities of fish that local stocks can prudently yield, and the nature and scale of farmed production has been unable to make up the short-fall.

The finite nature of Europe's marine fish resources is all too obvious to the processing, distribution and marketing sub-sectors of the industry, who, in order to meet consumer demand, have had to rely increasingly on the sourcing of raw materials from outside Europe. The establishment of the Single Market within the European Union, and the extension of the trading regime to those countries forming the European Economic Area, has brought about major advances in the freedom of movement of capital, goods, labour and services. This has resulted in increased cross border linkages, and encouraged the development of multi-national wholesaling and retailing networks. One of the main results of this has been an increase in the scale of the businesses involved in these sub-sectors.

These revolutions have most certainly brought massive increase in consumer choice, and have brought about a general improvement in the quality of seafood on offer to the consumer. Certainly the improvements in quality have been greatly influenced by the purchasing power and good standing of large scale operators, but scale factors in the processing, distribution and marketing chain have also tended to work against the smaller operator.

For many such operators, the risks associated with the local sourcing of fresh supplies - on a daily basis, when fishing and overall market conditions are so variable, yet consumer demand so even and predictable - are too high. Such operators prefer to source product from more distant suppliers. Indeed, where appropriate, it is still more advantageous for many fish wholesalers, processors and wholesale distributors, to secure **frozen** supplies from distant sources. From such sources, the freshness of the product can be as good as one day old fresh wet supplies, product can be secured weeks in advance and, whilst competition for supplies can be intense, prices are still generally lower than for equivalent fresh wet product. In all these transactions, scale counts.

For fresher and higher quality wet and live product, traded volumes tend to be smaller, lot sizes tend to be lower, and the end market requirements tend to be more flexible - at least in product and species type - but for small daily deliveries. Typically the demand comes from restaurateurs, independent fishmongers, specialist food retailers (whether or not they are independents or components of multiple retailers), and specialist processors. In this market segment prices tend to be higher, but so too do costs. High quality tends to be recognised and rewarded, whereas with the bulk markets, all product that meets a minimum specification is acceptable, with little recognition of quality beyond this common denominator.

For smaller scale operators, located, or resourcing primary material in peripheral areas of the Eastern Atlantic Seaboard, getting their product on to any market on a more or less regular basis can be a boon. Doing so for a wide range of daily volumes, and at prices consistently stronger than local demand can support, is a trader's dream. Electronic marketing, on the face of it, can offer advantages to such traders, by allowing them to more efficiently, and more consistently, access both small lot and high volume markets.

On this basis, it would appear that electronic marketing systems are highly likely, if designed, installed and operated effectively, to deliver distinct advantage to producers in establishing consistent and more direct access to distant markets, which may offer price stability, if not also higher prices. It would also appear that scale, both large and small, can be easily accommodated in such systems, and that these advantages might also be expected to encourage others to land fish to such peripheral ports, and to trade fish on such peripheral port markets (when at present they seek to land more directly to larger port markets, consign their landings to such markets, or land under contract to distant processors and wholesalers).

A switch to the use of electronic clock auction systems is likely to have neutral impact in relation to the fortunes of large or small traders. But the establishment of linked auctions, and/or remote bidding facilities could greatly improve the trading positions of the smaller wholesalers, particularly if combined with an appropriate, co-ordinated and accessible transport network. Such developments could allow smaller traders access to a range of markets on a par with larger organisations, larger organisations that would be expected to have direct representation at each market.

Were more distant remote buying to become common-place, the services of local traders would be required as "the eyes and ears" of still more distant buyers, and as the providers of the logistical support necessary to the channelling of supplies to distant intermediate and final markets. For the larger traders, the core of their businesses would still, in all likelihood, remain the product of large scale fisheries. If they were to deal with lower volume landings, they would tend to do so on the same basis as smaller traders. Where POs, fishermen's co-operatives and fishing vessel agents might have the advantage over others is if they also engaged in the trading of fish, and could access information (advance landings information) that other parts of the trade were denied. The advance warning systems being experimented with by the French offer such advantages.

2.5 The market-place

Where does the consumer stand in all this? Does the consumer have a stake in decisions as to what marketing and distribution systems are employed in delivering fish to retailer and restaurateur?

Producers do undoubtedly react to market forces, but do so in a general rather than specific sense. Catching what the market wants is still at odds with the competitive forces at play in respect of resource access, quota systems, and the underlying economics of fishing.

Growing what the market wants is both more feasible, and a more rationale basis for managing growing operations - though even here, producers tend to concentrate more on what growing technologies can offer to production, than to what they can offer in respect of meeting market demand.

Traders are much more keenly aware of market forces, and the imperatives of seeking to balance supply with demand. But whose demand? With the growth of multiple retailing, and large buying and distribution networks, traders more commonly seek to satisfy the demands of the retail and catering trades, and such intermediate processors as the trade requires, than the demands of the final consumer. And there is much debate as to the extent to which the characteristics of consumer demand control the structure and nature of the catering and retail trades, and the extent to which the commercial requirements of the retail and catering trades mould consumer preferences.

Two points of dislocation in the trading of fish and fish products appear - that between producers and the ultimate consumer, and that between the final wholesaler and the ultimate consumer. It is here that improved information collation and analysis, and improved communications systems, could substantially improve matters. This could undoubtedly be mediated by electronic marketing systems.

2.6 Competitive advantage

The **consumer**, then, appears to be something of a passive player in this affair. Indeed there are plenty of indications that consumer wishes, preferences and buying characteristics are only imperfectly transmitted down through the production chain, and then only with a considerable time delay. Changes in consumer preferences in terms of seafood appear to be more geared to processed products, and bulk processed products in particular. Here, such underlying changes in demand are met, in time, by changes in product design, product ranges, and product image and promotion - all aspects of the industrial scale, capital intensive, operations of the processing sector of the industry, where change is necessarily cautious and slow.

In fish eating terms, consumer attitudes range from just ordinarily conservative to highly conservative, giving high preference to a small number of traditional species and products, and showing increasing discrimination, in a European context, in terms of freshness and taste from west to east, and away from the centre along a north-south axis.

But there do appear to be indications of fundamental change in consumer perceptions and requirements in regard to live and fresh seafood. There appears to be increasing concern by consumers that they should be able to have full confidence in the freshness, eating quality, lack of contamination, and high hygiene standards associated with any live or fresh seafood they might purchase. There is increased interest in experimenting with new types and product forms of seafood - particularly by those regularly eating out - and a particular interest in things exotic and tropical. At the same time, there is increasing concern about the harmful effects of fishing or fish farming on the environment, and many consumers seek confirmation that the fish they are buying has reached them without inflicting unreasonable damage on other aspects of the environment, and without reducing the sustainability of the systems involved in its production. At the extreme, an increasing, though still very limited, proportion of the consuming public is prepared to recognise and pay a premium for very high quality live and fresh produce.

These trends run counter to developments in the bulk handling of live and fresh wet fish, but in the context of a limited high value market, they do reflect characteristics that European producers should be particularly well placed to respond to, where smaller scale production methods may have a competitive advantage, and where electronic marketing systems might be able to secure maintenance of that advantage all the way through to the consumer. Recent

historical trends are that the number of fresh retail outlets for fish has dropped significantly, as has the volume of product traded through remaining outlets - across Europe. Multiple retailers play an increasingly dominant role in the market, and, responding to the ease of handling requirements of both consumer and retailer, there has been unprecedented growth in the range and volume of **frozen** seafood traded.

With upwards of sixty per cent of European Union fishery supplies now originating from outside the Union, and the now clearly recognised finite nature of Europe's own fishery resources, the future of the European fishery industry rests in the development of those qualities in which it has a competitive advantage - freshness, and the capacity to respond to short-term market fluctuations. The stage is now set for concerted action to be taken to enhance the value of domestically caught and grown seafood, by looking to supply premium product to the top end of the European markets. In this, it is already evident that electronic marketing systems have the capacity to support such a strategy, and that, at the very least, those ports that use and access such electronic systems can, and do, possess the capacity to establish and retain advantage over competitors within the European arena.

3. Electronic trading systems - the technology

3.1 Introduction

As a general pointer, there is little that cannot be achieved in the area of electronic marketing using readily available technology:

- Systems such as Minitel and Prestel, which provide for basic information exchange, on demand, between server and client, have been around for some time; most travel agents use this type of system.
- More sophisticated systems based on fast modem links between PCs (Personal Computers) are in common use by many businesses, and can be easily adapted for a range of uses. For example, stock taking systems linked to check-out stations are in day to day use in supermarkets across Europe, where the bar code of your purchase is checked through the check-out scanner, and the sale information held for later down-loading to an in-store or remote site data-base which controls stock levels. This system has been developed further, to explore the buying patterns of a store's customers. Thus a recent addition to this system is the use of "loyalty cards", where discounts are offered to regular customers, with the by-product that information on the combination of goods purchased by a particular type of customer can be analysed by reference to data provided by customers at the time they apply for their loyalty card.
- With the massive increase in use of personal computers, the deployment of optical fibre cabling as the basis for modern fixed telecommunications links, and the evolution of hard copy communications from telex to facsimile to e-mail, the opportunities for development and use of more user-friendly and sophisticated information systems grow by the day. Electronic marketing systems are able to take advantage of such developments.
- The advances in access to and use of the Internet have received enthusiastic support from the world of academics, and from recreational users, but its uptake by the business community is rather slower. Nevertheless, the facilities offered by the Internet's e-mail functions are easy to use, and cheap. "Surfing the Internet" is rather more fraught with obstacles, but if you know where to look, it can provide an invaluable platform for providing useful information, incorporating text, graphics and sound, with the facility that any information provided can be modified easily. For example, it is perfectly feasible for a group of oyster growers to present information on location, production facilities, handling and transport, complete with pictures, together with details of historic production, future harvesting schedules, product remaining available for sale, and an automatic enquiry or order form facility. Details can be updated as and when appropriate. It is already possible to order, and in some cases pay for, fish on the Internet (a form of electronic shopping), and more sophisticated bid systems are beginning to emerge in the US, Japan, and Europe.
- Ship to shore radio is now a basic technology in marine matters, as is the use of satellite communications. The use of digital communications systems is now greatly widening the

range of communications applications available, at acceptable prices, to the general public. Data files can be accurately, and confidentially, downloaded from on-board computers to shore based computers, as in the experiment currently underway in southern Brittany, and in systems being developed as part of the multi-national INFOMAR project being executed as part of the EU's ESPRIT R & D Programme.

- Remote bidding systems are the very basis of trade on the world's stock markets, with a wide range of systems that combine market tracking with real-time bidding. In sharp contrast to the world of high-finance, remote bidding is also an established and accepted part of the world's main cut -flower auctions.

As should be clear, the use of the technology is only restricted by people's imagination, the resources applied to developing a particular application, and crucially the acceptability of any system developed to the users or potential users of that system. Invariably, it is the last point that governs the extent and speed at which such systems are applied within the fishery industry.

3.2 The problem of remoteness

A great deal of the electronic technology available for the auctioning of fish products has a primary aim of speeding up, and improving the transparency of, the auction process. The primary aim of this study is, however, to evaluate the possibility of using electronic marketing technology to alleviate the problems of peripheral fishing communities, mainly by increasing the number and geographical coverage of the fish buyers, and thereby increasing and stabilising the selling prices.

The type of system required, in order to increase the number of buyers accessing remote fish auctions, has to do away with the locational problem of distance from the main markets, where most of those interested in buying fish will be based. Buyers are unlikely to travel long distances to a fish auction when they do not know what is likely to be available when they get there, when similar fish is likely to be on sale at nearby auctions.

It is possible, through electronic technology, for boats to report-in to ports prior to arrival and announce the size and content of their catch, and for this information to be subsequently distributed to potential buyers in order to solve the first problem of not knowing what is on sale. But this does not overcome the disadvantage that isolated ports suffer from due to their distance. Even if a buyer knows that the fish that he wants will be available in port C, he is more likely to go to port A or B if these are considerably nearer, due to the savings he or she will make in transport costs and time. Hence, the theory is that buyers should be able to access auctions from their offices, via some sort of electronic link, and so buy fish at a remote location, and arrange efficient and speedy delivery to a nearby or other remote location.

Such remote linking has traditionally been done by ringing up a merchant operating on the market or markets in question, and seeking further locally specific information, and/or instructing the merchant to represent the caller on the next auction, and/or placing a provisional purchase order. But the aim of electronic marketing is to create systems where distant buyers are at no disadvantage, and where the selling process is as transparent as possible. For this reason, the distance of the buyer from the auction should not affect his ability to bid on equal terms with those present at the auction. This is often referred to as "real time" bidding - through advanced technology a buyer is able to stop the auction clock at virtually the exact time that he presses a button at his terminal. This type of system is well established in the sale of flowers and vegetables, but is only just starting to be utilised for the sale of fresh fish.

3.3 Basic set of electronic marketing systems

Four basic components make up the trading process:

- background information against which the trade is made (both supply side and market related);
- specific information on the product offered for trade;
- a system for reaching a price settlement between seller and purchaser, including the resolution of competing bids;

-
- a settlement procedure.

In addition, the practicality of remote bidding can greatly extend the efficacy of such electronic systems.

These five components are described below.

Background information: General information provision is an interesting component of the trade, and one that is currently almost totally down to the efforts of individual traders. The trade press provides background editorial on the industry, national and regional administrations provide basic historical statistics on landings (usually well in arrears), and industry development bodies and representative organisations provide more current information on market trends. All of these are no doubt useful, but are very general, and out-dated, in nature.

Current and specific information on aspects of supply and demand, and on the course of recent trades, is not generally available in any formal sense. Such information tends to be compiled on an individual basis, through a trader's numerous phone conversations with other traders, with wholesalers, retailers, caterers, fishermen and port and market officials. It is this information gathering that takes up a large proportion of a trader's efforts, and which he or she puts to work when inspecting product for sale, and when bidding for that product during auction.

As is described in the examples given below, more regularised systems for information collation and dissemination are currently available in France - through the Datapeche system. An earlier example of such a system was the London based AGB Fishnet computerised fish price information service, established in 1984, which collated daily price and volume information from 29 markets in the UK, Denmark, Holland, Belgium and France. In retrospect, this service was probably a little before its time, and closed in the late '80s.

The Datapeche system, privately run, but supported by FIOM, the French fishery industry body, is receiving variable response from the industry, with some concerned that such information should by rights be in the public domain, whilst others see its prime advantage as being its limited circulation⁵. Still others wish to use such a system, but do not wish to provide reciprocal information to such a database. These attitudes are representative of the main arguments for and against the restricted circulation of information - limited circulation of information provides competitive advantage, general circulation of information underpins improved trade, but undermines the achievement of competitive advantage. It is perhaps the management of information, as to what is and is not made generally available, that is most important from a commercial perspective - a number of examples are given below.

Specific information on the product offered for trade: Not all ports sell fish by auction, but where they do, they do so on the basis of what you see is what you get. Despite the existence of standard EU established grading and quality systems for seafood, there are very few ports that apply them in a manner that is replicable on a day to day basis, let alone from port to port. The primary variable is weight - assumed to be standard for a given size of fish box, but which is in practice varied for all manner of reasons according to the scale of landings, the quality of fish, the size of fish, and the extent to which efforts are being made to stretch out fishing quotas. Such changes in box loading make a mockery of estimates of first hand sale prices per kilo, and thus make price comparisons between ports, and between daily auctions, very imprecise.

Where electronic markets are in operation, most require that each box of fish be independently weighed, such that the weights listed in the catalogue of sale are a fair reflection of product weight. Accurate size and quality grading are also important aspects of a port market's reputation, and considerable store is put by such consistency by the POs, market operators and traders.

But even here, on established electronic auction markets, such exemplary practices have been hard won. The basis on which fish is traded is still primarily by sight, or on the basis of second-hand information provided through the reports of trusted intermediaries. Even where remote

⁵ We understand that FIOM has been exploring other options for the provision of this type of information. Further, the exact status of the Datapeche system is unclear, given the recent transfer of ownership of the system from Service Agro to Agro Marché International.

electronic bidding is practised today, it is done so on the basis of someone having reported on a visual inspection of the product, irrespective of the codes used to identify a product.

It is in this area that any port contemplating transition to an electronic auction system is likely to meet with greatest resistance.

An appropriate bidding system: Electronic technology was first introduced into fish auction halls in the form of computerised clock systems. This form of selling is basically just a modernisation of the traditional mechanical clock auction, used in Holland since the turn of the century. Usually using a falling clock bidding system, for any given lot put up for sale buyers would use an electronic link to the clock to stop the clock. As the price descends, the first buyer to stop the clock would secure the purchase.

Most such systems utilise an auditorium type bidding room, where each buyer has a unique seat and electronic link, often with additional extras like a phone link to the auction manager, a second for independent calls, and a computer screen where the buyer can review details of earlier bids, and his individual or the auction's historical performance. Where a link-up to other auctions has been established, such a computer screen can be used to observe current and historical performance on other markets.

Before the auction commences, each buyer is supplied with an auction catalogue, detailing lot weight, size grade and quality grade, where caught, how caught, by what boat, and when discharged to the port. Lots are normally laid out for inspection on the market floor, or in a temperature controlled inspection room (and now humidity controlled - this obviates the need to use ice to maintain low temperatures). During the auction each lot can be displayed at the front of the auditorium but, in practice, once an auction has been up and running for six months or so, most buyers are happy to dispense with this procedure.

With improvements in radio technology, it is now quite easy to provide buyers with hand held bidding systems, so that fish auctions can, if required, be conducted in exactly the same way as shout auctions are conducted today. The bidding manager is replaced by a mobile electronic clock (an auctioneer, or auction manager, is still required to manage proceedings, and to adjudicate, if required), and buyers can inspect the product and bid from the auction floor. The use of mobile phones for contact with base and with clients remains as before. What this system does not allow a buyer to do is to access a host of other trade information that could otherwise be provided from a fixed bidding location. The loss of this access could, in theory, give a remote bidder, bidding from the comfort of his or her office, an advantage. Thus with the up-grading of a basic clock system to remote bidding, an auditorium-type bidding system is generally more appropriate.

The computerised clock not only speeds up the auction, but also greatly improves the fairness and transparency of the selling process, since the clock displays the price that the last lot was sold at and also the name of the buyer. In a traditional auction, where there may only be one auctioneer, it is virtually impossible for the auctioneer to watch everybody at the same time and there is consequently a chance that bids will be missed. With an electronically controlled auction it is virtually certain that the first, or highest, bidder will secure the sale.

Not all electronic auction systems elect to use a falling clock system of bidding. A wide range of bidding procedures can be accommodated using electronic clock systems. The basic permutations are summarised below:

- **Sale by descending bids** - This method, otherwise known as a Dutch auction, is the most popular on the continent, and is also the fastest. The clock starts at a high price and simply descends until one of the buyers presses his button, thereby stopping the clock. It is virtually impossible, given the accuracy of the system, that two or more buyers will press their buttons at precisely the same time, but, if this is the case, most auctions prefer to sell the lot again.
- **Sale by descending bids (alternative method)** - The clock starts at a high price and then falls, as with the Dutch auction. Once the first bid is received, the price is increased by a pre-determined value and then begins to fall again. If no bid is made before the level of the first bid is reached for a second time then the lot is sold at that price, to the original bidder. If a bid is made at a higher level than the original bid, however, the lot is assigned at the new, higher price.

-
- **Sale by ascending bid** - The majority, if not all, of the fish auctions in the UK are operated on an ascending bid basis, whereby the price continues to rise until only one buyer is left bidding. Such a system can be operated with an electronic auction, as is the case at La Rochelle. In this instance, the auctioneer starts the auction at a high price and the clock then falls until a buyer presses his or her button and stops the clock. The price then remains at that level for a pre-determined period of time. When another buyer pushes the button during the running of the timer, the price is increased by an agreed increment and the timer starts running again. This process continues until no buyer bids during the timer period and the last bidder then gets the purchase.
 - **Sales by ascending bid (alternative method)** - The method described immediately above is unpopular as it slows down the auction process considerably. Therefore a faster ascending bid method has been devised. In this case, the price starts descending and the clock stops when a button is pushed. The buyers are then given a fixed time to raise the bid by pushing their buttons. If one or more buttons are pushed during this period, the clock ascends again. The bidders do not release their buttons until they are no longer prepared to pay the purchase price. Hence the price continues to rise until only one button is depressed. If no bid is made during the fixed time, the lot is assigned to the first bidder. When this method is used, buyers cannot raise their own bids.
 - **Sales by ascending bid (second alternative method)** - This last method is a mixture of the two previous ones. The procedure is the same as in the method described immediately above, until the point when there is only one buyer left. At this point the buyers are able to raise the bid by individual pushes, as in the first ascending bid method described above. This method allows a buyer, who decides at the last moment that he wishes to buy the lot, to still bid.

Appropriate settlement procedures: An advantage of electronic trading systems is that the key information concerning a particular sale is already held within an auction's computers, and can be relatively easily linked to an invoicing system. This can be done automatically and facilitate improvements in the efficiency of auction operation.

It is also possible to link a bonding or guarantee system to this process. It is common on many auctions that buyers need to place a bond or guarantee with the auction managers as a pre-requisite of bidding on a given auction. Using an electronic auction, the auctioneer can be automatically alerted as to when a buyer has reached a pre-set purchase limit, linked to the extent and type of the bond placed. This allows the auctioneer the freedom to halt a trader's bidding activities should such a trader have reached his or her purchase limit. Whilst this is not common-place, there are certain types of trade where bad-debts are more common, and this type of facility can greatly improve financial discipline, and reduce auction trading risks, and thus costs.

It is also possible to link auction generated data to centralised databanks, so that industry statistics can be more easily collated and disseminated - and fed back to skippers and buyers in the form of historical trend information. Such links have their drawbacks, however, since the auctions generate information that it would not be commercially appropriate to put into public hands, or to provide to local administrations. Certain ports might also wish to restrict the circulation of certain data to a discrete clientele - for example as is the case with the French Datapeche system, where input and access to the system is discretionary, and subject to a subscription charge.

Accordingly, where such linkage is established, it is done so on an arms length basis, with certain types of information collated by the auction house, and presented to others on disk or tape, as appropriate. In this way, authorisation for access to such data is separated from anything directly to do with the auction process itself. Further, such authorisation can be based on the consensus of port users, rather than on the decision of auction managers.

Remote bidding systems: The key to this technology is the concept of real time. That is, that the simultaneous bids of remote buyers at some distance from each other, and from the auction, and thus subject to communications delays, are recorded as being simultaneous. The technology is such that if a long distance buyer presses the button a fraction of a second before a buyer in the auction hall does, despite the finite, though minuscule, delay in transmitting this information to the auction, this real time relationship will be maintained by the system, and the remote buyer will secure the purchase.

It is now possible, and indeed increasingly common in auctions on the Continent, for buyers to carry out their buying from a site other than the auction hall, thus saving the cost and time incurred in travelling to and from the sale. Each remote buyer uses a standard PC with the required auction software installed on it, which is linked to the auction through normal telephone lines, via a modem. At the moment, two lines are required to make a connection, one for the computer link and one for the audio link with the auctioneer, but, by using ISDN lines (allows for much more information to be transmitted along a single line), it will soon be possible to make both links using just one line (many European urban centres can already access such improved telecommunication systems).

A facsimile of the auction clock appears on the PC screen, together with general and individual information about the fish sold. In practice, many remote buyers are based near to the auction and inspect the fish prior to selling. As of yet, grading systems are not always reliable enough to allow actual distant buying, as opposed to remote buying, although the technology is available.

Such tele-auctions can also be run through a hub network. In this case a number of markets are linked to one central computer, so that buyers attending any of the auctions can buy fish being sold at the other auctions, even though they are not actually in attendance. The lots of fish from each auction are sold one after another. Such a system is common in flower and vegetable markets, but is yet to find favour at fish auctions, as the buyers are reluctant to open up their auctions to a wider market.

A slight variation of this is the simultaneous auction where, as the name suggests, a number of auctions take place at the same time. During a simultaneous auction, buyers can switch between the clocks of the auctions concerned by pressing a function button on their computer, thus allowing them to bid at any of the auctions. There are plans to link all eleven fish auctions in Holland in this way (Urk, Ijmuiden and Den Helder being linked already), although this plan is currently facing resistance from the buyers.

4. Electronic Marketing in Practice

4.1 Introduction

In this set of examples, we explore the possible application of electronic marketing systems to three components of the industry:

- the concept of a hub, or inter-connecting, system joining ports together in the Highlands of Scotland, or in Ireland - similar to developments being explored in Iceland, Holland and various parts of France;
- the application of electronic trading to the crustacean industry, and specifically the vivier trade in crabs - building on the experience gained in attempts in 1986 to develop such a system in southern Normandy;
- the application of electronic trading systems to the marketing of rope and bottom grown mussels.

The location of these examples of potential use are Scotland and Ireland. They are, however, as applicable to the French industry. The French industry is far advanced in the evolution and application of electronic systems relative to Scotland and Ireland. The French industry already takes a strategic approach to matters of marketing, and the next steps in this evolution are generally clear. Even so, many parts of the French industry are still to be won over to the advantages of electronic trading, and it is clear that developments to date have not been achieved without struggle, resistance, false starts and mistakes. Nevertheless, it is appropriate in terms of the study to look to how electronic marketing systems can be applied to Scotland and Ireland.

The *first example* looks at hub systems, using the white fish fishery industry of the Highlands of Scotland as the basis for the example. Here, a range of medium and small scale ports operate side by side, supporting the activities of large and small vessels. None of the ports are supported by large communities, and the road systems connecting these ports to the main

trunk road system of Britain are rural (generally narrow and winding). Only the larger of these ports support a regular auction.

The **second example** takes a second look at the electronic marketing of live crab and other crustaceans. The markets for live crab are concentrated in France and Spain, whereas key production concentrations, representing two-thirds of total edible crab production from Europe, are located in Ireland and Scotland. This example examines the interlinking of these production and market areas, but in the context of the rapidly growing production in both Scotland and Ireland, and the recent evolution of extended vivier road transport networks to uplift product from these remote locations for delivery to the markets of France, Spain, Portugal and Italy.

The **third example** takes a look at the parameters of the mussel industry, concentrating on the bottom and rope cultivated mussel industries in the UK and Ireland. The example looks more closely at the northern markets - northern France, Belgium and Holland - the main target markets for live product from the UK and Ireland. Whilst this only represents a part of the market (French, Spanish and Italian production is much larger), it is the juxtaposition between the production of bottom culture and rope grown mussels, and the different characteristics of the markets for these two distinct products, that are primarily explored.

Common threads running through these examples are:

- the important role of “agents of change” - someone has to set the ball rolling, and have the conviction to follow through their ideas;
- the industry is naturally resistant to innovation - but primarily because it alters the balance of interests in the industry;
- removing such resistance may require developers to include “comfort factors” - factors that may be contrary to the logic underlying such innovative systems and, albeit temporarily, undermine the advantages offered by a new system;
- the technology is not a limiting factor - defining the most appropriate system for a particular set of circumstances may be;
- co-operation in such ventures is difficult to achieve, but essential to the success of such innovations;
- the industry participates in such developments primarily on the basis that it will gain competitive advantage over others - neighbours and/or more distant targets;
- participation in systems that share the advantages with too many people, even, or more particularly, local people, may meet with strong opposition;
- power, and the control of information, appear to be at the root of people’s interest in, and fears of, such marketing technologies.

4.2 Example 1 - A hub system for the marketing of white fish

4.2.1 Market linking and remote bidding

The basic problems that the peripheral areas of Scotland and Ireland, and to a lesser extent France, suffer from are ones of scale and location. Many of these ports continue to prosper due to their proximity to the fishing grounds, but the relatively small scale of the communities supporting this industry, coupled with distance from the main consumer markets, and further exacerbated by poor infrastructure, means that the number of buyers in the local markets is limited. This results in lower and more volatile prices than at the more centrally located ports, as well as a great deal of the catch being consigned directly by road, with the resultant loss of benefits to the local economy.

The need to strengthen prices to the producer, linked with the desire to access the major continental markets, has led many within the industry to consider the introduction of electronic marketing systems. This has recently resulted in a tentative foray into electronic marketing, in the sponsoring of an examination of the feasibility of introducing an appropriate system for the

trading in deep water species of fish, through a system linking the ports of Lochinver and Kinlochbervie, with future linkage to the French port of Lorient.

The introduction of an electronic clock auction onto the markets at these two ports would represent little benefit over the current systems of selling unless it was eventually linked to a remote bidding system, allowing merchants from further afield to access these markets. This is not to under-estimate the importance of the first steps in the introduction of electronic systems - the French examples show that the industry has to become familiar with the technology before utilising some of the more sophisticated tools that such systems have to offer. This process has to be approached slowly, with caution, at a pace dictated by the industry. But it is, nevertheless, the development of such a system to the point where remote bidding is a matter of common practice that the principal benefits of such a system become apparent. It is the remote bidding component of a linked system that is primarily addressed in this case study.

It could be said that remote bidding, of a sort, already exists in the areas under study. For example, Spanish, French and Belgian buyers all buy from the market at Kinlochbervie, through an agent who phones through the market prices and volumes, acts on buyers responses, and then arranges the transport of the bought product to appropriate destinations. It would seem a positive and sensible step forward to formalise these links using modern technology.

It could also be said that electronic systems are already playing a role in the general sale of fish, on the premise that by using satellite communication systems, skippers remain in regular touch with their shore-based agents, thus facilitating the more efficient marketing and distribution of their catches. Skippers prefer these systems to ship to shore radio due to the improved level of privacy that they offer, and find that the discipline that such communication encourages does pay off in terms of improved landed values. Further development of such systems could be based on the more formalised systems being explored by the Breton industry.

4.2.2 A computerised hub networking system

The electronic technology is currently available to link together a number of port auction rooms by means of a hub networking system. The justification behind such a system is that it would allow buyers at one port to become involved, simultaneously and on a fair basis, with auctions held at the other ports linked into the system. At the same time, buyers with access to the system, usually via a normal PC, would be able to bid in any of the linked auctions from a remote site, such as their business premises. [It is of note that, in the case of the Highlands of Scotland, much effort has been expended in installing the most up to date telecommunications facilities available. This initiative has formed a component of a strategic development programme to counter the geographical and economic peripherality of the area.]

In order to keep the number of required links to a minimum, and also allow more ports and remote buyers to join the system once it had been set up, without incurring large costs each time a new link were made, the system would be managed through a central or "hub" computer, which could be located almost anywhere, but in the case of the Scottish Highlands would most probably be located in Inverness. Each market would be linked to the central system, rather than each being linked directly to each of the others.

Links between the remote buyers' PCs, equipped with the required software, and the central computer are made through telephone lines, via a modem. Currently, two lines are required to make such a connection, one being used for the computer link and one for the audio link between the buyer and the auctioneer. But using fibre optic cables and ISDN lines it will soon be possible to make these connections using just one telephone line. A reproduction of the auction clock appears on the buyer's PC screen and the buyer is able to stop the clock when he or she wishes to bid. The buyer can also access general and individual information about the fish already sold.

The major benefit of such a system is that it would allow buyers to buy from a number of different auctions, without actually having to travel to the individual auction premises. This is the key advantage for a remote region such as the Highlands, where a buyer based in, for example, Peterhead, is unlikely to make the lengthy journey to Kinlochbervie to buy twenty boxes of fish. By allowing buyers to bid from their offices, thus saving the journey time to and

from the auction, it is hoped that the number of buyers involved in the auctions will increase, thereby leading to increased competition and better prices.

In order for such a system to work, remote buyers must not be disadvantaged in the bidding process by the fact that they are not present at the auction. Previously, remote bids were carried out by telephone, with a remote buyer instructing a person within the auction room when to bid; but this meant that there was a time delay and remote buyers were effectively at a disadvantage when compared to those buyers bidding on site. Current technology allows remote buyers to bid with no disadvantage caused by their distance from the actual auction. The technology is such that if a long distance buyer presses the button a fraction of a second before a buyer in the auction hall presses his button, the remote buyer will still secure the purchase, a concept known as real-time bidding.

In order to allow buyers to buy from a number of different sales, auctions could be held one after another, although this method is unpopular with auction managers as they fear that prices generally fall as you go through the various auctions; such that the last auction held is likely to yield poorer prices than the first. An alternative method is for the auctions to be held simultaneously, with the buyer being able to switch between auctions by pressing a function button on his keyboard.

It would be possible for the software to be programmed to take account of transportation costs automatically, so that they are included in the sale price indicated on the buyer's computer screen. If connections were to be made to auctions in different countries, it is also possible to convert the prices into the currency of the buyer's home country, at the correct exchange rate. Both these concepts mean that the buyer will be aware of the exact price that he will pay for the fish should he wish to bid.

For the Highlands of Scotland, such a system could link the major landing sites of Lochinver, Kinlochbervie and Scrabster, for example, through a central computing system based in Inverness, with the possibility of linking other smaller ports to such a system, such as those of Wick, Ullapool, and Portree, for example. The actual conformation of such a network would depend on a range of variables, not least the compliance of each of the port and market operators. In this particular example, the port of Scrabster is privately operated, those of Wick, Ullapool and Mallaig are operated by Harbour Trusts, and those of Kinlochbervie, Lochinver, Kyle, Elgol and Portree are managed by Highland Council.

This option has recently been exploited by vessel agents operating at the ports of Ijmuiden, Zeebrugge and Egersund, who have recently established an electronic link-up for the purpose of selling one day old fish - the last day's catch - of those vessels affiliated to each of these companies, allowing buyers at each of the sites to bid for lots for sale at other auctions. This is an interesting development as it indicates that certain market segments are clearly prepared to pay a premium for fresh fish, a premium that can be consistently and profitably handed on to the final consumer.

4.2.3 Costs

Aside from the possible requirements for special temperature-controlled display areas (probably not required, given that most Highland port markets have recently been substantially upgraded), the main costs of such a system are the hub computers, electronic clocks at each auction, hand-held radio links to the auction clock, and then such remote terminals as buyers may need. The need for special bidding theatres is not indicated, given the small number of buyers present on each of the markets in question, though this may have to be reviewed in the light of the needs of particular species of fish, and particular ports - for example nephrops at Mallaig, or deep sea fish at Lochinver and Scrabster.

On the basis of the use of Moby clocks, computing power and hand-held sets for on-market use, the following roughly estimated costs could apply:

	ECU
Moby-clocks (x 6)	2.5 M
support computers (x 4)	7,000
modems (x 60)	11,500

remote units (x 40)	40,000
hand held bidding sets (x 80)	11,500

4.2.4 Likelihood of success

The way ahead

There is a definite need, as commented on by those being interviewed, to take into account the individual circumstances and idiosyncrasies of each port when designing a new system, in order to maximise its potential benefits. For example, the sheer quantity of fish landed during the pelagic season at Ullapool prohibits the use of a standard auction system, due to the length of time that it would take to sell the fish. Currently, the fish is consigned, with a large proportion being destined for Aberdeen and Grimsby. The idiosyncrasies of the nephrops trade, in which a number of distinct product forms are sold as first-hand sale - live nephrops, fresh whole, shell-on tails - and the different market segments for which it is destined - vivier transport, chilled fresh, fresh frozen, cooked, and processed - will require that special consideration.

Haulage costs are a major factor to be considered in any new marketing system. One of the major problems that isolated landing sites suffer from is that buyers have to pay large transfer costs to get the fish to the markets and processors; for this reason they often pay lower prices for the fish. A linked electronic marketing system would have to take these costs into account through the price of the fish, as is the case in the Scottish milk auction, where the price offered includes delivery. In this, it will be important to achieve as many transport efficiencies as possible.

A computerised consolidation system, combined with the use of regional hauliers, should assist in this matter. Linkage with the distribution of farmed seafoods - salmon and bivalves - and vivier operation, should also yield dividends. Whilst the political and economic climate does not support subsidy, it is worth noting that the Norwegian industry does utilise fuel subsidies. These are used explicitly to reduce the disadvantages of distance from market, and in so doing, maintain the viability and demography of isolated and distant communities. Whilst it would be wrong to suggest that the strategic imperative, and the distances involved, are directly comparable, there is nevertheless growing recognition of the need to retain stable, socially coherent, and viable communities in the peripheral regions of the European Union - such as parts of Scotland and Ireland.

There would appear to be a failing, on the part of those selling and manufacturing the electronic marketing systems, to convince industry members of the benefits of the systems. Many involved in fishing are sceptical about these benefits, but it is essential that the majority of players are convinced that they will benefit from the introduction of the new system if it is to succeed. On the other hand, the electronic systems envisaged by these companies represent only a small, and specialist, sample of the many ways in which electronic communications systems can be used to effect and improve the marketing of fish and fish products.

Likely timescale of introduction

As stated above, it is our belief that electronic selling systems should be introduced on a gradual basis, in order to allow people to get used to the technology and increase the chance of their acceptance. In this case, it would seem that the best solution would be to first establish electronic on-market bidding at one or more Highland ports, and then to move on to remote bidding, and finally to move to a linked hub system, much along the lines of the evolution of such systems in southern Brittany and La Cotiniere. As can be seen from the case studies in Chapter 4, it has taken many years for these ports to reach the stage where they might contemplate linking with adjacent port markets. It will be difficult to short-cut this time-frame. If it is possible to shorten it, it will be as a result of intensive efforts to demonstrate benefits, to win over key opinion setters, and to bring about greater integration within the industry, and greater industry autonomy.

Looking at mainland Europe, it has taken them decades to advance from the original electronic clock selling system to the position that they are now in. It is unlikely to take this long for the

UK, as many of the steps used on mainland Europe could now be by-passed as the technology is already in place to introduce more advanced systems. However, it should be noted that, even on mainland Europe, the majority of the fishing industry does not appear ready for a genuine remote buying system at this stage. Whilst there are enlightened people within the industry who support the linking of distant auctions, most notably auction managers who see it as a means of raising the competitiveness and attraction of their auction, there are precious few, if any, examples of genuine remote buying for whitefish at present.

The remote buying that does take place at the moment is usually from a location close to the auction itself, with the buyer viewing the fish in the auction hall before the start of the auction, so that the real benefit of the system is to allow local buyers to bid from the convenient location of their own offices, rather than actually allowing buyers to bid long distance. Currently, with the inaccurate grading system that is in place, seeing the fish prior to purchase is nigh on essential.

Application of this case study to Ireland and Brittany

A hub networking system such as that outlined above could also be introduced in Brittany or Ireland. However the likely problems, benefits and attitudes outlined above cannot be related to the situation in France, where electronic marketing is already generally accepted and attitudes to change are more open-minded. However, there are many similarities between the fishing industries of Southern Ireland and the Highlands and the comments and observations above could equally well be applied to Ireland.

Over recent years, the relative distribution of the UK fishing fleet has been moving northwards, as the Scottish fishing fleet grows and its English counterpart declines. Since 1983, the Scottish fleet has grown by a quarter in terms of tonnage and nearly a third in terms of aggregate power. Due to increasing modernisation of fishing methods, however, employment within fishing has not shown the same growth, with numbers remaining around the same level as in 1983.

The West coast ports of Scotland continue to play a significant part in the country's fishing industry, due to their proximity to the fruitful fishing grounds off the West coast of Scotland. For this reason, a large number of East coast boats tend to fish out of ports such as Kinlochbervie, Lochinver and Mallaig, thus greatly boosting the landings of these ports.

The area under study runs from Mallaig on the West coast round to Avoch on the East coast. There are a large number of fishing ports within this zone, but the principal ones are Mallaig, Ullapool, Lochinver, Kinlochbervie, Scrabster and Wick. Within this area there are a number of Travel to Work Areas which are classed as highly dependent on fishing; these are Sutherland A and B, Thurso, Wick, Wester Ross A, Skye and Wester Ross B, the highest figure being in the area Sutherland B, where the fishing sector provides 21 per cent of all employment. This level of employment dependency is indicative of the importance of fishing to the area and its economy. There is very little processing within the area, with most of the fish being processed in Aberdeen or Grimsby.

At present, the bulk of fishery generated wealth associated with landings to Highland ports is transferred out the area - to Grampian, Humberside, and to Continental processors and trade intermediaries. By strengthening the competitive advantage of operation from Highland ports, it is likely that a greater proportion of industry revenues will accrue to local residents and locally resident businesses. An efficient electronic hub-network, providing remote access for UK and Continental buyers could provide such advantage, and open up a wide range of other opportunities - from further niche processing, to accelerated development of other fishing and fish farming businesses.

4.3 Example 2 - Future electronic marketing of live crab

4.3.1 Background

The core of the French crab industry, located in Brittany and southern Normandy, explored the possibility of introducing an electronic auction system for crab in the latter half of the eighties. These efforts did not result in the application of such a system, primarily due to irreconcilable differences over the detailed design of the system - but ultimately down to only limited

commitment by traders to the system. Some ten years later, it appears that interest is once again being expressed in bringing greater formality and transparency to this part of the fishery industry.

The consumption of edible and spider crab is firmly centred in France and Spain - in Brittany, in and around Paris, in Galicia, Madrid and Catalonia (area around Barcelona). Consumption in Portugal, and to a lesser extent Italy, is also significant. The market for velvet and shore (green) crab tends to be more oriented towards the Mediterranean coastal areas. The French market seems to depend heavily on supplies from the French domestic industry and from the English Channel fisheries of the Channel Islands and the South West of England. The Spanish industry seems to be more involved in the sourcing of lower cost product from the Irish and Scottish industries.

Whilst there are Irish and Scottish traders and groupings that seek to consolidate supplies for these markets, most still rely on the weekly or twice-weekly run of Spanish and French owned vivier lorries for the transport of product to ultimate market. There are Scottish and Irish owned vivier businesses but these are in the minority. Much of the trade is cash based, and reports from the market suggest that prices paid in Ireland and Scotland have been considerably lower than those paid for English and French originating product. This is due in part to the greater geographical dispersion of the industry, and the resultant higher transport costs, but this is also due to poor grading, mixed quality crab, the incidence of above average mortality during distribution, and inclusion of under-weight (lantern or empty crabs - a phenomenon associated with recent moulting) crab.

In production terms, the bulk of supplies originate from the UK and Ireland. As indicated in the following table, production of edible crab has remained relatively stable at about 25,000 t, but between them the UK and Ireland have been responsible for some 70 per cent of these supplies. Distinction should be made between the production from inshore potters, and that from vivier boats - vessels able to stay at sea for longer voyages, fishing large numbers of pots, and storing live crab on-board. The inshore potters operate on a daily basis, inspecting fleets of pots laid in inshore and coastal waters. The vivier vessels, sometimes referred to as super-crabbers, are highly mobile and tend to exploit deeper and offshore grounds, moving to new grounds as catch rates fall-off. These vessels have the capacity to land large volumes of product to port at one time.

Whilst in the past the larger proportion of crab production was cooked and whole frozen, or cooked and picked, the advent of vivier lorries and vivier transporter vessels, has greatly shifted the balance of trade away from frozen and otherwise processed product, to the export of live crab to the main consumption markets of France and Spain.

Clearly what was an almost exclusively French trade twenty or thirty years ago has come to be dominated by product from the UK and Ireland. Initially this arose as a result of growth in the crab fisheries of the south and south west of England, and, in the sixties and seventies, of the Channel Islands. Later, the threat to French dominance of this market was seen as coming from increases in production from the north east of England and Scotland, and then from strong growth in the fisheries to the west of Scotland. Most recently, there has been a substantial increase in the Irish fisheries, originating from the south west, and from the north west of Ireland. Unusual growth in from this quarter has occurred over the last three years.

Selected production of edible crab, 1984-91 (t, live weight)

	1984	1985	1986	1987	1988	1989	1990	1991
Isle of Man	57	49	146	56	51	106	33	57
N. Ireland	4	4	7	24	82	99	407	568
Scotland	4622	4236	3813	5207	6101	5264	4309	4688
England & Wales	6798	8175	7689	6170	6819	5046	7121	7158
Ireland	3015	4108	3670	4537	4593	4943	3367	4005
Channel Islands	2545	2005	1376	1564	1741	1603	1654	1543
southern Normandy	255	271	252	320	320	271	320	228
northern Brittany	2287	2925	2308	2375	2521	2632	2904	2471
southern Brittany	3145	3158	2443	2284	2317	2274	1998	1738
South West France	2132	2133	2156	2533	2210	1882	1897	1469
	24860	27064	23860	25070	26755	24120	24010	23925

Source: Eurostat

Given the production dominance of the Scottish and Irish industries, it is striking the extent to which the industry remains poorly organised, and the extent to which the industry is reliant on non-indigenous companies in the distribution and marketing of their produce. Given the highly perishable nature of the commodity, this may not be so un-reasonable, but it is nevertheless possible to hold healthy and good quality crabs for up to a month without undue loss of condition.

Application of electronic auctioning or selling systems may well be suitable for providing additional structure to this industry, and for providing improved revenues to producers. In such a fragmented industry, it is also the case that resistance from local crab merchants is likely to be much weaker - in fact many such merchants would stand to gain from the greater standing in the industry that more locally based auction systems might provide. On the other hand, the dominant merchants in France and Spain, with their established market access and industry connections, will still play an important role in the industry. What electronic systems could achieve, is to place these parties in more direct and informed contact with each other.

Benefits from such a system would revolve around economies of scale, greater trade transparency, to the advantage of producers, and substantial improvements in product quality, to the advantage of Continental traders.

4.3.2 Application of electronic marketing systems

It would not seem appropriate to promote the idea of individual auctions for this trade - competition would remain limited, and few advantages relating to economies of scale would be realised. What would seem more appropriate would be to link a number of collection stations together, whereby individual "lots" of product could be offered on a common trading system. Such a system would make little sense without linkage to French and Spanish merchants and traders. Such a system could be achieved electronically, linking centres on a regional, national or European basis.

A variety of options present themselves. By linking the production of a number of ports it is possible to support economies of scale, through groupage, even though such linkage might still allow small lots to be sold separately. Alternately, one or more shore stations could be established, where shellfish is consolidated and stored from a range of sources. Such storage centres exist in Spain and France, but have not been established, at the same sort of scale, anywhere in the UK. Here, the ownership of the shellfish would be transferred from each producer to the station, allowing grading and sorting to take place, and the imposition of tighter quality standards. On this basis, an electronic auction system could be based on the product from such stations, offered in lots according to species, size, quality, sex, etc.. In such an instance, the trade would be undertaken between bona fide and established traders, with the vivier transporters used more explicitly for moving product from production area to market area.

In much the same way, it would be possible for vivier vessels to participate in a parallel market, where advance information on landings could be transmitted through the same, or the same sort of system, and offered for competitive sale by auction, rather than the current system whereby such sales are primarily on the basis of prior contract or trader linkage.

Such trading systems could be established relatively easily in respect of the technology required. In this, it would be feasible to establish, say, in the order of a dozen auctions covering the UK and Ireland. Each auction would represent a number of ports, or a number of holding facilities, or even just a single holding system. Buyers would bid for such product on a remote basis, allowing them to use the same basic system to log on to one auction after another. A similar set-up might exist for Normandy and Brittany.

In time it might be acceptable to move away from a regional basis to such auctions, such that all appropriately authorised stations or collection points would be able to place their product on a single European auction network. This network could be accessed by any authorised trader, allowing him or her to log-on to one system, and to view a catalogue of all "lots" available for sale on a given day, or given week.

Drawbacks to the introduction of such a system are mainly to do with the capital investment in shore facilities. But this is not a matter related to the auction system, but rather to the improvement in the handling and storage of product. The installation of such facilities has been

debated in respect of many ports in the UK and Ireland, but with no action taken to date. The economic parameters behind the idea of such installations are well known - better quality, better survival rates, and economies of scale, reflected in improved sale prices. The economic justification for such facilities has yet to be fully explored, but the fact that they are considered an integral part of the French and Spanish shellfish systems is instructive.

Once again, it would appear that an environment needs to be established in which such an industry system can evolve. Trying to impose any such system on the industry is almost certainly bound to fail.

4.4 Example 3 - The marketing of live bivalves

4.4.1 Background

Bivalve husbanding and cultivation is of considerable economic importance in a variety of locations along the Atlantic coast of Europe, most notably in Holland, France and Spain. Market demand for the likes of mussels, oysters, and clams remains strong, and the opportunities for growth in production look good. In particular, the cultivation of mussels, scallops and clams looks promising, though there remain unexploited, or lightly exploited, resources in various parts of Europe.

Holland has a long-standing history in the husbanding of its extensive mussel beds, supplying strong demand on its domestic market, and in the neighbouring market of Belgium. This is a well established and mature industry, and is the only bivalve industry in Europe currently utilising electronic technology in the auctioning of the its product. France has equally long-standing industries in both the husbanding and cultivation of oysters and mussels, and while Spain has traditional industries in the harvesting of clams, its larger scale operations in mussel farming are of relatively recent origin.

The market for live shellfish, and the areas of prime consumption, remain the traditional centres of northern Europe for mussels, and southern Europe (including France) for mussels, and a wide variety of other bivalves, from various Minila and soft-shell clams to razor shells and palourdes. In addition, however, the demand from the restaurant sector in the UK and Ireland and central western Europe is on the increase.

Bivalve production is necessarily located well away from population centres, and health and hygiene constraints require that it be distributed live or in processed and time-stable (heat treated) form. As an example of how electronic marketing might be utilised in respect of this trade, we have chosen to use the Irish mussel industry as test case, taking the lead from the application of electronic technology at the auction at Yerseke, Holland.

4.4.2 Mussel rearing technologies

Under totally natural conditions, mussels can be found in extensive beds throughout Europe, normally in shallow water in or near estuaries or bays. Historically harvested for bait and for human consumption, most of these traditional beds have long been exhausted. Where such beds have remained in viable operation, as is the case with the extensive Dutch beds, they have been subjected to close management and disciplined husbanding practices. The bulk of the mussels consumed in Europe come from bottom grown extensive cultivation systems, where naturally occurring resources are husbanded to improve resource yields.

In the last twenty or so years, rope cultivation has become an increasingly common production method, providing thinner and cleaner shelled animals, particularly suited to non-traditional, and more cautious, markets. Such techniques are now in use throughout Europe, where they represent the main growth areas of the market - the volume of product derived from traditional bottom cultivated grounds is largely stable.

Bottom grown mussels tend to have thicker shells than rope grown mussels, are subject to greater marine growth on the shells (barnacles, weed, boring worms), and tend to suffer from higher levels of predation. Siltation on the grounds tends to increase the amount of grit contamination, though the pre-harvesting regimes are designed to deal with this. In general, there is no difference between the growing methods in respect of susceptibility to such health and hygiene problems as red tides, parasitism, and water carried pathogens. On the other

hand, rope grown mussels, tend to be less hardy, and subject to higher mortality during distribution. Ideally all mussels should be transported in refrigerated lorries fitted with sea-water spray systems. Such systems are available, but not in common use, and require high volume operation to make economically viable.

The traditionalists still favour bottom reared mussels, and this accounts for the bulk of the European market. This industry tends to be operated at an industrial scale, to produce largely homogenous product, and to be in the hands of established large wholesalers. The market is dominated by the Dutch and the French, and other suppliers, notably those from the UK and Ireland, tend to have restricted access to the market, coming to the fore only at such times as Continental producers experience delivery problems. Whilst the incidence of red tides appears to have increased in recent decades, causing the regular, but short-term, cessation of harvesting, the best environments for mussel cultivation are pollution free, nutrient rich waters, located away from major population centres.

Ireland, England and Scotland have established bottom mussel production, selling into domestic markets, but with the larger proportion of production supplied to Continental wholesalers, supplementing production from Holland, France and Spain. Whilst consumption of mussels, in general, is on the increase, production in the UK and Ireland still outstrips domestic demand.

The advent of rope grown mussel production has added a novel product to this system. Well suited to the British market, the, as yet, limited Scottish rope production is largely absorbed into the UK multiple and restaurant markets. In Ireland, the somewhat larger production levels of rope grown mussels are such that most goes for export. Only a small proportion, however, is exported live; the larger proportion of rope grown mussels is used to support a domestic processing industry, producing a range of vacuum packed cooked in the shell products suitable for distribution to catering and multiple retailers throughout Europe.

Ireland and Scotland have distinct environmental advantages in the production of mussels, relative to many sites on mainland Europe. But their current, but more importantly, likely future, difficulties in accessing markets in mainland Europe, will leave them increasingly at the mercy of Continental wholesalers, and the supply conditions on mainland Europe. Electronic marketing might be able to establish a better balance in terms of prime growing conditions, room for expansion, and market access. For the present this is likely to be more advantageous in respect of bottom grown mussels, but as rope grown production increases, this may become more important in this market segment.

4.4.3 The Dutch system

Mussel growing in Holland is a multi-million pound industry located in a concentrated area producing a fairly homogeneous product. The central mussel auction is based at Yerseke. The mussels are grown in extensive protected shallow sea-water areas along the coast of Holland. They are dredged from the mother grounds, and re-laid in pre-harvest areas where they are left until clean enough to be auctioned. The mussels are then dredged up again and a representative sample of each batch is taken to the auction room at Yerseke.

Each sample is checked, cleaned, weighed and sorted by size and then placed on display tables at the front of the auction hall. The information on the samples, together with the size of the total batches, is recorded on a catalogue which can be viewed by the buyers prior to the sale.

There is no bidding clock at the auction. Each buyer simply types in the price that he is prepared to pay, and the highest bidder gets the mussels. A screen displays the buyer number and price paid once each lot has been sold. The Producers' Organisation operates a withdrawal price for unsold mussels.

Currently there is no remote buying from the mussel auction at Yerseke. It would be possible to introduce this option through the technology available, thereby increasing the geographical coverage of the auction. It is even possible to reproduce high quality images of the mussels displayed at the front of the auction hall on the PCs of the remote buyers, although it may be that the quality of the image is not high enough to allow buyers to satisfactorily judge the quality of the mussels on display.

4.4.4 The Irish industry

The following section gives a brief overview of the Irish mussel industry and outlines the views expressed by the producers and merchants interviewed about improving market intelligence in the Irish industry and the introduction of an auction system.

Production

Production of mussels has remained fairly steady in Ireland at around 13,000 tonnes per annum since 1988 with the exception of 1989 and 1990 when annual production rose to 18,380 tonnes and 15,300 respectively. However, there has been a steady shift in the composition of the industry and a number of trends are worth highlighting.

The output of the more valuable rope mussels has almost doubled, although price has remained fairly constant at around IR£450 / tonne, whereas the trend in bottom mussels has shown the inverse with production fluctuating between nine and eleven thousand tonnes whilst price has doubled over the period from IR£113 in 1988 to IR£230 in 1994.

Prices of mussels tend to be determined at the start of the season and tend to remain fixed throughout, rather than fluctuating relative to supply and demand. This is especially the case with mussels which are sold to processors who see the mussel as a raw material which they want maintained at a constant price.

The prices for bottom mussels tend to be dictated by events at Yerseke although mussels at Yerseke sell for a higher price than Irish mussels. It should be noted that these are a different type of mussel.

Irish production of mussels from 1988 to 1994

		1988	1989	1990	1991	1992	1993	1994
rope mussels	Q	1,600	2,800	3,380	4,100	5,091	4,773	3,707
	V	675	1,000	1,352	1,845	2,342	2,148	1,668
	AV	422	357	400	450	460	450	450
bottom mussels	Q	11,048	10,760	15,000	11,200	8,731	8,884	9,260
	V	1,253	1,274	1,800	1,351	1,430	1,457	2,129
	AV	113	118	120	121	164	164	230
total	Q	12,648	13,560	18,380	15,300	13,822	13,657	12,967

Source: Irish Seafisheries Board (BIM) Key: Q - tonnes; V - IR£ '000s; AV - IR£/t

Co-operation

The Irish industry is characterised by a large number of small producers with an increasing number of co-operatives being formed. The longest running co-operative is in Wexford, where around 6,000 tonnes of bottom mussels are produced annually of which around 50 per cent is sold as fresh mussels to France. Another co-operative in Kilmackalogue outputs around 1,800 tonnes per annum and has 17 producers harvesting upwards of 30 tonnes each.

The large producers of rope mussels are owned by a big processing company and sell their product directly to the mother company. The main destination market for the processed mussels is France although they are also sold to Italy and Germany.

Although it is recognised that individually the Irish producers are too small to be competitive and that they need to present a united front on the European market, industry members still do not work together for their mutual advantage. There seems to be a gap between what is

recognised should be done and what is actually practised, although this attitude is allegedly changing.

There are a number of co-operatives in name whose main function seems to be assisting producers to pool together to fulfil buyers' requirements. The South East Shellfish Co-op is reportedly the only growers' co-operative that is involved in the whole process from production, through marketing to selling.

As in the UK there is no centrally operated market to co-ordinate the purchase of mussels in Ireland. The wholesale market is dominated by a small number of large buyers, though a number of producers now sell their mussels direct onto mainland European market. The main difficulty with selling direct are the transportation costs to mainland Europe.

Harvesting, handling and processing

The season for mussels opens in October. Unlike other harvested products, such as salmon, there is a certain amount of flexibility in deciding when to harvest shellfish. Delays of up to a month are possible if market conditions suggest this would be sensible.

At present over 70 per cent of the high value rope produced mussels is sold to Irish processors. Although it may be possible to get a better price in France, it was felt that for Irish mussels to be sold through an auction on mainland Europe, a holding facility would be needed for the mussels near to the auction, in order to store them and feed them to the auction on a daily basis. Such a process involves a number of risks due to changes in water temperature. For example, if mussels are harvested in May, water temperature will be around 12 degrees, they will be transported in water of around 4 degrees and then, prior to sale in France, placed in water of around 18 degrees. This may cause mass mortalities and spawning amongst the mussels.

One problem with selling to the processing factories is that the value of the yield can vary according to demand. In periods of high demand, the value remains buoyant but when demand drops, factories reportedly compensate for this by increasing reject rates rather than dropping prices. For example, processors who usually offer £450 per tonne which includes 10 per cent extra by weight to allow for rejects, will reject a further 20 per cent resulting in an effective 30 per cent reduction in price for the producer.

Markets and market conditions

Although mussel production is on the increase in Ireland, domestic demand remains quite low and production levels are still not significant in relation to European production as a whole.

Over the last couple of years the Irish mussel industry has managed to take advantage of strong demand from France, making up their shortfall during a time of low productivity in the French industry. Many Irish producers used to sell to France through agents in Ireland, but realising the negative effects that this had on their profit potential there has been an increasing trend for sellers to establish their output levels and then seek out buyers in France for themselves.

The industry is fairly stable at the moment but there is a feeling among a number of producers that it is essential to establish strong contacts with French buyers in case production picks up again in France and the demand for Irish mussels slackens. Traditional problems with payment have made sellers nervous about breaking away from long standing relationships. It seems that a large proportion of business is carried out through informal agreements and the client base is built up over a number of years through verbal negotiations rather than any formal contract.

A number of producers sell their fresh mussels to catering institutions and supermarkets in Spain and are concentrating on developing a strong market image for their product by emphasising its quality. The processed mussels are sold all over Europe.

Marketing

There have been a number of suggestions to improve marketing by emphasising the origin of Irish mussels when selling the product on mainland Europe. Attempts have been made to

market rope mussels in this way and two years ago the BIM looked into producing a logo but apathy on the part of the producers meant that this initiative did not get off the ground.

The reaction to this suggestion was mixed. Some producers interviewed had a number of reservations about distinguishing their product from other French mussels in case of discrimination by patriotic Continental consumers. It was felt by some that it is sometimes good to keep the product anonymous. Additionally, as in the UK, there is huge variation in Irish mussels and therefore some producers were of the opinion that it would not be possible to sell them under one trademark.

However, a number of the more proactive interviewees expressed the view that for the future Ireland needs to create the image of a consistent supplier of quality produce, to promote the origin of the top of the range products and to increase mussel demand in Ireland itself. It was felt by one agent that Ireland should be concentrating its efforts on the premium market, rather than the more competitive medium range. As Irish water is reputedly cleaner than that around France and it should be possible to market the mussels as "Irish mussels" and ensure a price premium.

Ireland's mussels vary greatly in terms of quality compared with the more consistently homogeneous product at Yerseke. It has been suggested that Ireland could overcome the disadvantages of this range in quality by introducing a national quality scheme with different grades within it. Although it is easier to sell good quality products, markets do exist for mussels of a lower quality and these should not be ignored. The introduction of such a scheme would allow Irish produce to be sold into auctions like Yerseke as, by guaranteeing a certain quality, the requirement to see the mussels prior to purchase would be eliminated.

The need for such a scheme was emphasised by one producer who felt that a code of practice organised by a central body was needed to define the product, so that buyers would immediately know what to expect of the product in terms of size, appearance, taste and overall quality.

For example, rope mussels in France have a number of different grades whereas Irish rope mussels are merely sold as a product between bouchot and bottom in terms of prices. In order to have mussels graded as bouchot, they have to be grown on a bouchot pole, a French method of growing and therefore effectively a barrier to trade. Also on the French market there are Spanish produced mussels which are a different type of mussel and therefore essentially a different size.

Attitudes towards market intelligence and electronic information systems

Interviewees were questioned about their attitude towards a market intelligence network whereby producers and buyers could log on to a PC and download information such as what was being sold, where and for how much. If there was no central auction system to provide this information then the system would rely on buyers and sellers to provide details, in confidence, of their transactions.

The majority of producers and agents interviewed felt that such a market intelligence system would be useful in providing supply side information that was lacking at present. This was backed up by the impression gained during interviews that some mussel growers knew very little about marketing and had a very poor level of information on the markets that they try to sell onto.

There was some doubt from one processor as to how much use on-line information would be for processed products as the market information currently available was already satisfactory. Whereas another processor believed that an on-line market information database would help his business, he also felt that the shellfish industry is very fragmented and may not be large enough to justify such a system unless it was on a Europe-wide scale.

One agent stated that she had received no market information from Irish Seafisheries Board (BIM) this year, and so a system providing a higher level of such information would be both useful and welcome, especially as two years ago the BIM contacted all of the Irish producers for information, but the competitive nature of the industry meant that nobody trusted the information that was subsequently released.

Evidence suggests that the growers are quite good at speaking to each other and sharing market intelligence. For example, last year Irish growers knew that the market in France was being heavily fished and so they agreed to hold off and sell late, with the result that prices remained buoyant for everyone. Such an example proves the advantages of increased market knowledge.

Attitudes towards auctions

A number of Irish mussel producers had visited Yerseke and were very impressed with the system there. However, the enthusiasm they felt for the system was tempered by the feeling that in comparison to the Dutch industry, the Irish industry is still somewhat in its infancy and not yet ready for such developments before a number of other aspects were addressed.

Most of the concerns about the auction system related to the necessary breakdown of well-established relationships that had been built up over long periods of time. This also raised the fear of not being paid as producers tend to sell to people that they know well and trust. Despite pointing out to interviewees that the auction would have a guarantee system in the form of credit bond it was felt that the danger of non-payment would be increased through an auction system as many of the buyers in Europe are small, family businesses which may be unknown to the seller.

A number of worries were also highlighted about guaranteed quality from the buyers' point of view. The present situation allows buyers and sellers who have an established relationship to take such factors into account when fixing a price whereas in an open sale, buyers may not be familiar with seller and therefore be less certain about the product he has purchased. It was suggested that quality control and grading systems would overcome such problems but the agents interviewed felt it would need to be well-established and trusted prior to the introduction of an auction system.

4.4.5 Possible use of electronic systems

As is all too typical of the fishery sector, the Irish mussel harvesting and farming sub-sectors are highly fragmented, are resistant to co-operative arrangements, are production rather than market oriented, and are highly protective of each organisation's limited market connections and access to market intelligence. All this against a backdrop of markets dominated by mainland Europe, and mainland European producers. The industries of the UK and Ireland have managed to develop and further exploit such niche markets are open to them; in particular, the Irish processor have developed effective long-term business exploiting convenience markets in Spain, France, Italy and Germany.

All those who have visited Yerseke, and observed the auction in operation have come away impressed. They have indicated that such a facility would do wonders for the Irish and British industries, but from a more practical perspective have indicated that on the basis of low volume, lack of homogeneity, and the dispersed nature of the industry, it is difficult to see how such a system could be applied to Irish and British production.

In addition, the tendency of the industry to work to a standard price throughout the year presents little price incentive for an auction system. What is more important in market access.

In achieving market access, some have raised the possibility of increasing returns to producers by selling to wholesalers operating closer to final markets. But most also recognise the limitations of the current logistical systems in getting product to final market, and readily concede that dealing with locally based wholesalers is a cost-effective method of marketing product. Any improvement on such a trading structure would only be possible through the development of economies of scale, sufficient to make the operation of independent but specialist hauliers a viable proposition (possibly in combination with live crustacean transportation). This requires a level of co-operation that just does not exist as yet.

So, an auction system should be ruled out in the short and medium terms, and the achievement of increased industry co-operation should be established as a top priority, at least for the smaller producers - mainly the rope culture enterprises.

From an Irish perspective, every assistance should be given to the processing industry in securing and expanding its market, since this does appear to be a valuable, effective and economically justifiable outlet for farmed product.

But even so, as production increases there will be increased pressure to sell more and more product live onto the Continental market. In this case all the indications lead towards the establishment of a high quality image, and the targeting of particular segments of the market, including the premium segment of the market (recognised as located in Belgium, but under the tight control of the Dutch). Overall improvements in industry infrastructure, handling facilities, industry practices, grading, packaging, and the application of established and industry-wide quality standards, will be essential support measures to the establishment of such an image.

But it will still be necessary to take such an image to the market, in such a way that it will be rewarded in generally higher prices, greater market access, and generally more stable trading conditions. There is no beating the well worn traditional methods of gathering market intelligence, establishing long-term and stable trading relationships based on trust, and established record, and promoting Irish or individual enterprise product at trade fairs, exhibitions, conferences, and the like. But it is here that it may be appropriate to explore what electronic systems have to offer.

Two areas come to mind - the collation and dissemination of market intelligence, and the promotion of joint and individual enterprise product to such wholesalers, retailers and caterers that may have an interest in sourcing from Ireland or Scotland.

In the first, it may be appropriate to explore the simplicity and cost-effectiveness of using the e-mail facilities of the Internet to collate and disseminate market intelligence. Various features of the Internet can be utilised, from the straight use of e-mail routing, to the formation of one or more specialist user groups, to the establishment of the Bulletin Board. All that is needed is for each enterprise to acquire a Personal Computer and a modem, and to take out a subscription (nominal) to an Internet provider.

The first and second options require some-one to co-ordinate the affair, acting as a central point. In the Irish situation this might be usefully undertaken by BIM, which already manages industry promotion and market intelligence gathering. Alternately, this could be co-ordinated by the Irish Shellfish Association, or any other grouping of mussel farmers. A similar structure could be established with respect to Scotland, drawing from a similar range of industry bodies.

The use of a Bulletin Board represents a slightly more open system, which may not be quite as appropriate to the exclusive nature or purpose of the intelligence being gathered and disseminated. It may, however, if utilised by mussel or shellfish growers throughout Europe, or further afield, form the basis of a useful area of communication, supporting growers in establishing more open and co-operating linkages.

4.4.6 Other possible ways of selling mussels

Futures trading

Future trading systems are already used to sell a number of commodities world-wide and their use has been discussed within the industry for the sale of farmed salmon. The concept has to date been rejected, but it nevertheless remains valid in respect of trade in relatively high value, and homogenous, products, such as farmed salmon, farmed shrimp (a futures market in frozen farmed shrimp is in operation in the States), and possibly even for mussels.

Under a futures trading system, the producer would input his supply information, such as the quantity, quality and meat yield of his mussels onto a PC, together with the proposed future date of availability and an asking price. A mussel buyer would then enter the system looking for a specific product at a specific date and would select a suitable supplier. The buyer can decide to:

- accept the asking price, leading to a binding contract
- take out an option to buy, whereby the seller has to sell to that buyer at the date of sale, unless the buyer decides not to utilise his option, in which case he loses his deposit paid for the option and the seller can sell to anybody through the usual channels. Options to buy in the future can be traded by buyers.

-
- make a counter-offer that remains valid for a fixed period. The seller does not have to accept this offer and can still consider offers from other buyers. The seller can decide to accept the counter-offer, leading to a contract or alternatively change his asking price, leading to a form of negotiation by computer.

Lots unsold on the futures market would be sold on a daily auction, similar to the one at Yerseke.

If there is a dispute between the buyer and seller when the goods are delivered to the buyer (bearing in mind the fact that the seller will not have had an opportunity to view the goods prior to purchase) the central auction organisation would act as the arbitrator. In such a case, either

- the buyer will be found wrong and has to accept the goods at the agreed price
- the delivery is found to not be in accordance with the contract, in which case the auction has to negotiate a new price, or in the worst case the goods are rejected and returned to the supplier and the auction has to find substitute goods.

Selling through the Yerseke auction

The concept that Irish mussels could be sold onto the auction at Yerseke, thereby allowing them access to all the buyers competing within the auction, holds little attraction. Many of Ireland's mussels are sold to France and it would therefore be beneficial for the auction to introduce a remote buying system which allowed these French buyers access to the market as well. A key question is whether or not mussels would have to be brought to the auction site, or whether they could be sold *in absentia* through a strictly enforced quality control and guarantee system. Bringing mussels to the auction from areas as distant as Mayo would have a negative effect on their quality, even given modern transportation methods.

Selling the mussels without inspection would be possible, provided their quality was strictly controlled and a guarantee system was operated by the auction company. The company would also have to guarantee payment to encourage buyers and sellers who were not familiar with one another to trade together. Currently the industry relies upon established relationships between the buyers and the sellers, developed over a number of years and there is a certain reluctance to break away from this arrangement. Essentially, it would appear that mussel farmers are risk averse by nature.

An on line information system could be introduced, indicating what had been sold to where and for how much at past auctions. Essentially, the concept is one of a Europe-wide auction for mussels.

Strengths

- Greatly increased number of buyers, leading to a more competitive selling point and better prices
- Sale of mussels opened up to market forces, instead of sellers being tied to an annual contract
- Greatly improved market information could be generated by the auction
- Would lead to the introduction of a much needed quality control and grading scheme

Weaknesses

- Problem of buying without established relationships
- Perishable nature of mussels
- Highly variable quality and features of Irish mussels
- Irish mussels different from those sold on Dutch auction
- Need for purification of mussels on site prior to sale

4.4.7 Conclusions

Electronic auction systems are not always appropriate

Despite the fact that almost all visitors to the electronic mussel auction operated at Yerseke are impressed by the system, the conditions that make it a success do not really exist elsewhere in Europe, and most certainly not in Ireland. At the particular scale and level of development of the mussel industry in Ireland, it is doubtful that any automated trading system would benefit the industry - the basic systems of traditional contacts, and negotiation by phone and fax, seem more than appropriate for establishing a trade.

But it is in the marketing and promotion of the product that substantial improvements could be made - most particularly to the advantage of the producer, and the owner / farmer. Here other, readily available, electronic communications technologies may be of assistance in overcoming disadvantageous elements of scale and remoteness from areas of consumption. These are low cost, encourage non-threatening forms of industry co-operation, and may form the precursor to greater industry integration.

Application to other segments of the industry

What may work for mussels may also work for other bivalve molluscs, whether farmed or wild harvested. There is growing interest in novel fisheries in the more remote areas of Europe, and established and buoyant markets for a wide range of bivalve molluscs in the consumer markets of southern Europe (and increasingly at the upper end of the restaurant trade in northern Europe). Harvesting of cockles, winkles, razor fish, a wide range of clams, goose barnacles, scallops, etc., etc., is on the increase, and in one way or another, the marketing of such products could be enhanced through systems that inform a wide customer-base of production, facilities, location and availability. Where such harvesting and marketing is undertaken by small scale operators in peripheral areas of Europe, it is distinctly possible that the use of such systems could underpin and enhance the viability of such low volume operations, allowing them to establish a low volume trade route in parallel to that dominated by the large, industrial scale producers.

5. Attitudes to change

5.1 Introduction

As an indication of the industry's attitudes to change - in general, and in respect of trading arrangements - we undertook a structured survey of industry representatives associated with the ports of the Highland area of Scotland. Broadly similar attitudes to change are evident within both the Irish and French industries, highlighting the extent to which the ground has to be prepared before significant change within the industry can be effected.

The following descriptions draw on a series of semi-structured interviews with a wide range of individuals who would be affected by the introduction of electronic marketing systems. The interview sample comprised harbour masters, harbour trust representatives (where applicable), buyers, agents, sellers, skippers, processors and Fisheries Officers from a range of small ports.

The ports investigated can be divided into two distinct groups: those which have an auction market and those where fish is sold by contract and consigned. Attitudes towards the sale of fish differ greatly between these two groups, but, in both cases, there was a resistance to change across the board. Industry participants, from crew members to agents, felt reasonably happy with the current system and did not believe that any change would necessarily be for the better. Nor did they believe that the advent of electronic marketing for the sale of fish was inevitable. The areas in general are characterised by a reluctance to alter established practices and a suspicion of new technology.

5.2 Survey results

Comparison with other ports

There was a tendency among many parties to look to the conclusions reached by other ports regarding electronic marketing and to treat their decisions as final.

For example, one buying agent stated that he could not see the need to introduce electronic marketing as it had already been rejected by Peterhead, a larger port on the east coast of Scotland.

This comment concerning Peterhead was cited on a number of occasions by different individuals, and was seen as a reason for giving electronic marketing no further thought. In addition, it was felt that electronic marketing would have negative repercussions for the individuals involved as they formed only part of the many 'links in the chain' to the markets in Spain and France.

Further, agents also stated that since electronic marketing had been rejected by Peterhead, and Grimsby (because it was detrimental to prices), then it could not work in their port.

By contrast, one buyer was in favour of electronic marketing, and is trying to promote it in Peterhead.

The need for merchants to see the fish before buying

The absolute necessity of 'buying with your eye' was raised by almost all the agents in all the ports concerned. It was felt by many agents that it is essential to actually see and check both the quality and weight of the produce before buying in order to get the best possible trading position.

Related to this was the comment that, if the fish were re-graded according to size, then the premium of the freshest fish would be lost because they would be mixed in with the other fish of the same size. This was felt to be particularly detrimental in a system where boats are now out for seven days at a time, and thus freshness of the catch becomes an issue.

Another buyer raised the point that a major factor in electronic marketing was the confidence from buyers to buy an unseen product when they are 200 miles from port. For this to come about he believed that there was a need to train fishermen in the required weighing and grading skills.

Breakdown of traditional relations between buyers and agents

Related to the above point is the long established trust between buyer and agent concerning quality of the fish. A number of merchants expressed misgivings about electronic marketing in terms of the loss of personal relations with the buyers and of cutting out the "middlemen".

One buyer was specifically concerned about the long-term relationships and understandings that he had built up with his exporters. He felt that if his company was to become involved in direct buying, these relationships could be damaged. Thus, any exploration into this area is being carried out carefully as the company is currently very careful about the amount of fish it exports directly to Europe because it feels that it could damage the relationships it has built up with exporters.

Concerns about changing the bidding system from ascending to descending bids

A number of points were raised about changes to the bidding system.

The majority of interviewees felt that the bidding system which is used in association with the Moby clock requiring a switch from ascending to descending bids, would not only go against the traditional method of bidding but would also have detrimental effects on the prices received for the produce.

By contrast, one Fisheries Officer was in favour of a Dutch Auction as he felt it would ensure a better price because "It introduces an element of fear because if you miss the bid (the price you're willing to pay) then it's gone".

Another aspect of the current system called “bidding to the lamp-post” was highlighted as being potentially incompatible with a change in the system. This is when the auctioneer states a higher starting bid than he actually has so that he does not have to work so far up to the true value of the lot.

Increased competition between buyers

In many of the ports a large percentage of the fish received is already consigned. However, in those ports where there is already a market, it was felt that the present system allowed for much-needed competition between buyers, through bidding against each other. The clock system, on the other hand, was perceived as impeding competition with ensuing effects on the price received for fish, and, in turn, on the payment received by boats.

By contrast, one large Peterhead based buyer, who buys from the markets in the Highland Region, mentioned that his main reason for being in favour of electronic marketing is his need for anonymity in the market, as other smaller buyers who knew his minimum requirement of boxes per day could keep pushing up the price. Further, his view was that fishermen would be interested in electronic marketing because they know that they will get a better price.

It was felt by one skipper that the auction system in his port worked well, was fair and ensured a better price. In his opinion the access to buyers is good as there are a number of buyers who are buying for others. He saw competition between buyers as very important and contrasted the situation in other ports where there is only one buyer.

This aspect of a market appears to be key to any skippers who had comments to make about the way in which their fish are sold, and that if remote buying meant more buyers, that could be something of benefit to the fishermen. Nephrops fishermen based in Gairloch stated that the lack of competition between buyers in their port was detrimental to prices.

Skippers in another port were not convinced about the benefits of increased competition as they had tried to sell their catch in markets with more buyers but found they got approximately the same price as they did in their own port with one buyer.

Facilities needed for re-grading in terms of both space and manpower

A further perceived implication of the clock system or remote buying is the need for re-grading of fish. Many of the interviewees from Harbour Authorities and Fisheries Officers to buyers and agents were worried about the resultant logistical aspects.

The lack of space was felt to be a key issue in many cases. For example, in Scrabster even with the new market building, the boxes are piled three high in a normal market, and it was felt that there would certainly be no room to sort the fish. The interviewees were of the opinion that another building of at least equivalent size would be required to provide this facility. Similar views were expressed by a number of individuals interviewed in Kinlochbervie.

Some buyers were more concerned about the availability of experienced labour in light of the fact that landings were so erratic. Thus, it is felt that the facilities could not be made available for the necessary re-grading needed for the standardisation of the fish.

One company in Mallaig was fairly positive about electronic marketing in theory, but doubted the feasibility of it working in practice due to a lack of the infrastructure and facilities in Mallaig required to check, weigh and re-grade the fish. He also mentioned the difficulty of getting a consensus about the way forward for any development in the port.

The feeling that they are already remote buying

Both skippers and agents in a number of ports felt that ‘remote buying’ and the use of communications technology in some form was already occurring in the Highland Region.

A number of skippers gave the example of merchants who telephone buyers in England to get prices which varied from day to day; skippers telex in for the prices and then base their decision on whether to land that day on the level of the prices.

Further, it was felt that 'remote bidding' of some sort was also already occurring in Kinlochbervie as Spanish, French and Belgian buyers all buy at the market through an agent who telephones them with quantities and prices, delivered Aberdeen.

No opportunity for comeback if the buyer was not satisfied

This point is closely linked to the point above. It was felt that one danger of buyers not seeing their produce due to electronic marketing is that there would be no opportunity for comeback once a sale had gone through. The misgivings were on both sides, firstly in terms of the quality matching the buyer's expectations. And secondly, from the agents who face the risk that having paid their boats the buyer could refuse to pay, for whatever reason, leaving the agent out of pocket. It was felt that it would not be possible to rectify this situation through a remote buying system.

Financial guarantees and issue of payment

One merchant raised the issue of guaranteeing payment from remote buyers based overseas. At present any company that buys through them has to have money lodged in a Scottish Bank as a guarantee of payment. They felt that there may be difficulties in getting foreign companies to tie up money in a Scottish Bank.

A number of skippers had similar misgivings about changing to remote buying related to the issue of payment for fish landed and sold. One skipper stated:

"The good thing here is that you get paid when you land and sell the fish. If you're working through remote buyers, and foreign buyers, you're talking of 90 days' credit. It takes about £1,000/week to even keep the boat tied up, and about £4,000/week to run it ... so you can't wait for that kind of money. We're totally in the buyers' hands - that's the bottom line".

Reduced flexibility with electronic marketing

A number of interviewees at different ports with auctions felt that the present traditional systems allow flexibility, in two specific ways. Firstly, with the increased amount of time it takes for the bids to occur, if the buyers' agent cannot buy fish for the price specified by his buyer, he can contact the buyer and advise him of that; the buyer then has the opportunity to increase the bid. The second, closely related, facet of flexibility concerned the greater possibility of the price going up during a longer market.

Speeding up the system

However, one company was positive about the ability of electronic marketing to speed up buying. It presently takes a long time to complete the auction in some markets due to the dependence on every buyer getting around the market as there is a feeling that it could be that last bid that puts up the price. This could also be a factor of a lack of competition between buyers, as for example in Scrabster it takes approximately 2 hours to get through 400-500 boxes compared with a large market, such as Hull, where they get through 3000 in 10 minutes where there about are 20 buyers pushing up the price.

The initial cost and long-term financing of the system

Concern was expressed by some Harbour Authorities about who would pay for the clock system, and for the associated costs. Similar worries were also mentioned by buyers and agents in a number of ports that such costs would lead to the harbour taking a bigger commission from the boats and that this, in turn, would lead to fewer boats landing.

Ability of electronic marketing to cope with remoteness

The main point mentioned by many different interviewees with regard to remoteness was the cost of transportation which many did not feel could be overcome with electronic marketing and remote buying.

For example, one skipper was convinced that it would not work because buyers want to buy as cheaply as possible and so they would not want to be involved in the cost of haulage from their port. This was also the opinion of the manager of a fishselling company who said that they had seen a demonstration of the Moby clock a few years previously but believed that it would not be practical because of the transportation costs of, for example, sending a lorry to France and back. The skippers involved in whitefish also expressed concerns over remote buying.

However, one fishseller felt that electronic marketing in some form could perhaps help to overcome remoteness by increasing the number of buyers and thereby the competition and prices in the port.

Comments from the skippers in Uig focused on remoteness as they deal in a high value product which is only bought by one (or occasionally two) buyers. They did not feel it was possible to attract more buyers and, moreover, they felt that the current arrangement was satisfactory.

Changing from consigned to auction

A number of the ports in the Highland Region rely heavily on consigned or contracted purchases rather than an auction system. The attitudes of those involved in buying under contract range from those who have tried the auction system and have 'progressed' to contract buying, to those who have not attempted to sell their produce by auction but are satisfied with the status quo they have reached.

An example of the latter is the nephrops market where the nephrops are all consigned. It seems that the agents are happy with the system they have at present because the price is more stable, which seems to outweigh the fact that it may not always be as high. They compared their system to an auction where the prices were said to fluctuate considerably. Another concern was that buyers may not want all sizes of nephrops whereas with the systems they have, buyers are committed to a catch from specific boats.

Two buyers of nephrops in one port were also not in favour of changing the way things are managed at the moment; that is from 'bought at sea'. Overall, they feel that the system has been finely honed to how it now operates, and if any improvements could be made, they would have been made already.

The argument was also raised by another nephrops port, that the system as it operates at present is felt to have taken years to establish, and works well. Thus, it is felt that there is little need for change; and further, that moves towards remote buying would be considered a regressive move and would have negative repercussions which would make it untenable.

Ullapool, despite the large amount of fish passing through the port, does not have an auction. Two buyers' agents in the port felt that the arrangements now in existence were the ones best suited to the amounts being landed (in the case of pelagics and whitefish), and the types of market requirements (in the case of nephrops). However, they had diverging opinions about the advantages and disadvantages of the auction system per se.

Attitudes of fishermen to electronic marketing

The fisherman's attitude towards electronic marketing is essentially one of disinterest. They believe that, once the fish is caught and landed, it is out of their hands. As long as they get a "good" (satisfactory) price for their fish, they do not mind how it is sold, to whom, or where it ends up. When asked whether skippers would prefer access to a greater number of buyers, the majority stated a trade-off which they had to make between steaming to another port where they may get a better price, and accepting a lower price at a closer port. There seemed to be a feeling that the skipper had little control over the buyer.

Peculiarities of Highland Region and individual ports

A number of interviewees felt that the idiosyncrasies of Scotland in general, and the individual ports, in particular, would preclude the possibility of electronic marketing and remote buying working in the Highland Region.

In a number of cases there was the perception that the system may work well on 'the Continent' but that in Scotland the different circumstances would make the clock system inappropriate. The main points of contention were the longer times that the boats landing to the Highland Region ports stayed out, and the fact that they were dealing with smaller, more fragile, fish which are more likely to get damaged.

At a more local level it was felt by many interviewees that the idiosyncrasies of their port meant that a change in the system would be inappropriate, both due to the loss of the traditional, open market and the huge diversity of species landed by each boat. However, one merchant in Scrabster conceded that telephone auctions could work as used in the Faeroe Islands.

Another buying company had reservations about a change in the system due to the existing peculiarities of buying and selling within Scotland; for example, on the East coast the auctioned price is reduced if you buy in bulk, whereas on the West coast the auction price stands regardless of the amount bought. The manager of the company had seen a video of the Moby clock and recalled that it generated a mixed reaction. He felt that it was just another system that people would use to their advantage or disadvantage, although he conceded that it would speed up the auction.

One fishselling company had a number of views concerning remote buying and electronic marketing following a visit to Zeebrugge and Boulogne to see systems in operation. Their feeling was that it works well under certain circumstances, but it would not work in Scotland. They had three main objections: firstly, they would lose control of the auction; secondly the increased time taken for preparing for the auction, i.e. weighing in each boat; and thirdly the requirement for a completely independent auction body, which does not exist at present.

5.3 Creating the right environment

The overall response to a shift away from what is seen as the traditional, conventional auction system, is negative. The ports are variously established, or developing, and thus have concerns relating to their own perceived need for either consolidation or change. Although some individuals have seen demonstrations of alternative systems - such as the Moby clock - they see their applicability largely remaining within "the Continent" where the size and variety of fish caught is perceived as different. Further, it was felt that the on-shore facilities which are needed for the associated re-grading and sorting would, in Scotland, lead to prohibitive harbour dues which would, in turn, discourage landings.

Positive responses were thus in an extreme minority; one buyer, one Harbour Trustee and one representative of a Fishermen's Association, saw advantages in the system being discussed. Others perceived the advantages to be outweighed by the perceived negative repercussions relating to Scottish, or port, idiosyncrasies.

No-one saw these specific changes in marketing as inevitable, and felt that, should their introduction be imminent, they would find ways of working around the system, or manage the technology to their advantage, should the need arise.

The introduction of such changes would, therefore, require absolute sensitivity to: local port structures, decision-making hierarchies, sectoral interest and concerns, and the current perceptions held by individuals when discussing these alternative options. The technological changes would lead to far more than merely academic or cosmetic impacts, and these would need to be explicitly and rigorously addressed, at individual port level. This would facilitate dialogue, which would comprise an imperative stage in any development in this area.

6. Conclusions

General

Our researches suggest that electronic marketing systems have much to offer the fishery industry as a whole and, in the coming years, their use is likely to spread considerably, primarily to large volume, first hand, auctions. This is where the most obvious benefits of automation are to be realised. But the scale of these markets is such that there will be little incentive to explore beyond the point of automation - the main buyers are directly represented on each market, and can thus bid for product in person.

Instead, exploration of the real core of electronic systems - remote access, contextual bidding, price stabilisation and forward trading - will be left to the smaller ports of mainland Europe, and some components of the aquaculture sector. Here, such systems will be used to provide quality conscious segments of the market with the continuity of supply and stability of prices that it so craves, and in so doing, underpin the long-term profitability of participating port, fishing and trading businesses.

In France, Belgium, Holland and Norway, electronic trading systems are there to stay. For the time being, the UK, Ireland, Spain and Portugal may well continue to resist such technologies, but such resistance is likely to be counter-productive in the medium and long-terms. Certain forms of electronic trading, particularly utilising remote trading procedures, are likely to become key components in the distribution of prime quality product to the main markets of western Europe.

Thus, the Spanish industry is geared to serving a large, high value, and expanding domestic market, and could probably manage to protect its interests without the use of electronic systems (though it too is likely to embrace electronic marketing practice sooner rather than later). The use of electronic marketing techniques by producers and traders in the UK, Ireland and Portugal, incorporating remote access, is likely to greatly strengthen direct access to buyers and consumers in the main market-places of Europe - France, Spain and Germany. In contrast, failure to seek and secure such access leaves the industries in these key production areas wide open to take-over by those companies operating in, or currently supplying, the core markets of Europe. The terms of the Single European Market ensure the free movement of capital, goods and labour. Already a range of French, Spanish, Dutch and Belgium fish trading companies have set up in locations along the Irish and Scottish coasts, from where they can feed prime quality seafood to processing and trading companies located on the mainland of Europe. Access to prime quality seafood is likely to present an increasingly valuable and attractive business opportunity.

But what of the peripheral areas of France? These ports depend on trade links with the French, Spanish and German markets, in much the same way as for Highlands of Scotland and Irish industries, but they have already taken steps to protect their interests, by pioneering new forms of market access. There are very few examples of non-local operators setting up in the small and medium sized ports of Brittany.

The problem they now have arises from their close proximity to the markets. Most inland wholesalers, multiple retail groups, and caterers need to know that they can secure sufficient product for their daily needs. If they order today, for delivery tomorrow, but insufficient landings are made to the normal range of supply ports, then they are stuck. For many such intermediary and end users, it may be better to order today for delivery in two or three days time - for example from England, Scotland or Ireland. This way they have at least one or two days warning to make alternate arrangements for any shortfall in deliveries. The French ports are not just addressing this problem by seeking to co-ordinate supplies through auction linkage, they are also seeking to give extended forewarning of under- or over-supply conditions by reporting catches rather than just landings. These ports seem to be well ahead of the game.

Market position

The use of electronic marketing systems by smaller ports, or by particular segments of the fishing or aquaculture sectors, is to do with marketing - not the trading of a port or industry's products, but with the marketing, and market position, of that port or fishery sector. Whether to use or not to use electronic marketing systems is a matter of strategic planning.

If a port or industry sub-sector does not have a strategic plan or marketing strategy, then it is clear that it is far too early in the evolution of that port or sector for it to even consider the introduction of such systems. On the other hand, where such a plan and strategy already exist, it should be fairly clear whether or not the use of electronic trading technology has an immediate or longer term role in the business activities and strategic marketing of that port or sub-sector.

Electronic marketing systems are not a substitute for the design, introduction and operation of effective management systems. Where such management systems already exist, however, electronic marketing systems may offer a cost-effective means of adding value to such systems.

In the vast majority of the ports and sub-sectors of the industry reviewed as part of this study, strategic planning capabilities and practices are limited, and are insufficiently developed to make it worthwhile considering the introduction of electronic systems in the short, and in some cases also medium, terms.

Taking a lead from the French

In terms of small-scale operation, the French ports studied are most advanced in terms of strategic planning, and in the development of strategic advantage through the appropriate deployment of electronic marketing. The case studies described in the appendix show that this advance has been hard won.

Of note, however, in most cases this process was initiated from within the particular industry, and on the basis of a strategic analysis of the future market position of the port in the context of a national or international market for fish. In all such instances, the first step has been the introduction of an electronic clock system - using a mobile clock on the market, or running the auction with a fixed clock from a separate room. This pursuit of strategic advantage continues, and many such ports are now building on the acceptance of the basic system, and are actively exploring more sophisticated auction systems - remote bidding, inter-connectivity between markets, linking to trade databases, generating advance information on supplies to the market.

On the basis of this and other findings, key features in the introduction and evolution of electronic marketing systems appear to include:

- initiation from within the industry
- the result of strategic analysis
- recognition of market position
- national or international market
- pursuit of strategic advantage
- achievement of acceptance of the basic clock system.

For Scottish and Irish ports included in the study, none of these key features are recognisable:

on the whole, fishermen are largely disinterested, and traders are actively resistant to the idea of electronic marketing, though some port and industry administrators are interested in exploring the possibilities;

a strategic approach to port and industry development is poorly developed (and where it exists, it is of a parochial nature only), and the institutional structures for planning are generally far removed from the ports themselves;

few ports recognise that they are in competition with suppliers throughout western Europe;

most ports actively market their services to producers, and spend rather less effort marketing their industry to those who would seek to source supplies from such ports - they view their market as being at sea rather than on land - the French (and more logical) view is the exact reverse.

Taking control of future developments

The economic viability of peripherally located fishing communities is already under threat, if not already well on the way to almost total dependence on exogenous funding - retirees, urban commuters, tele-cottagers, offshore workers, second house owners and summer tourism. By remaining intrinsically peripheral, the fishery activities of such communities will become less and less competitive, and lose out to larger and more efficient operators.

With none of the producing areas studied (southern Brittany, north western Scotland, south western Ireland) able to dispose of anything but a small proportion of their landings to local markets, it is essential that they be able to compete successfully on the more distant markets where demand for their products is strong (Spain and France, and to a lesser extent, Belgium,

Holland, Italy, Switzerland and southern Germany). To do this, they must establish and maintain direct access to such markets.

For the moment, such access is protected by a small number of merchants who may or may not themselves have direct access to the ultimate markets, and who may or may not have the best interests of the producers or the local community at heart. As matters stand, the tendency for such traders to protect their interests by restricting competition will in time cause operators closer to the ultimate market to seek to source direct. The location of Spanish and Dutch operations at French, Scottish and Irish ports is such an example, the location of French operations at Scottish and Irish ports another, and the operation of Spanish owned and operated vivier lorries in France, Scotland and Ireland a third.

At present, all the trading systems used to distribute product from location of production to market constitute avoidable economic leakages to the local economy. Appropriate use of electronic trading systems (ultimately involving some form of remote trading) can facilitate the shift of balance of control back to the producing economy, strengthen the viability of such producing economies, enhance competitiveness and market access, and encourage a more sustainable approach to resource exploitation and distribution.

Using such systems can greatly improve the efficiency by which fish trades are accomplished, but peripherality invariably involves some degree of geographical isolation. Getting fish to market also involves an efficient and appropriate distribution system. The successful introduction of appropriate electronic marketing systems will inevitably also require improvements in the physical distribution of product.

From a strategic point of view, there is not a peripheral port or aquaculture production area or industry that should not now be examining how to secure its future position on the main continental markets of Europe. In most cases, electronic marketing systems will play a part in such strategies.

The fishery sectors in the smaller ports and aquaculture producing areas of Scotland and Ireland have not yet evolved to a level of management and co-operation sufficient to support the introduction of electronic marketing. By contrast, most small ports and aquaculture areas in France have.

At the very least, then, for the industries in Scotland and Ireland, the study indicates that:

- the industries in these areas need to develop and/or improve their strategic planning capacities;
- consensus for development needs to be greatly strengthened within the industry;
- port-based industries need to pay rather more attention to the marketing of fish, than the marketing of port services to encourage the landing of fish to port; and
- the industry needs to take a less parochial view of its markets.

We also find that the advantages of electronic marketing systems are less pronounced for individual operators than they are for a port or production area as a whole.

Likely level of benefits

Does the introduction of electronic marketing systems offer, at the end of the day, such a pay-off that the industry should actively pursue their introduction as a necessary objective of the industry? Our researches suggest that:

- key advantages of electronic marketing systems for peripheral communities are that they have the potential to substantially increase the level of competition for product, to greatly increase the geographical extent of the market seeking to access such product, and to greatly improve on the transparency of each transaction;
- part and parcel of such developments is the destabilisation of local power bases, the undermining of the dominant positions of local traders, and a general disruption of the status quo - such disruption works to the advantage of most if not all producers, to the advantage of a few of the local fish traders and merchants, to the advantage of most of those who provide support services to the port or fishery sub-sector, and to the advantage of most who seek to utilise supplies from the port or industry sub-sector;

-
- existing power structures amongst port merchants are likely to be disrupted, but a new equilibrium is quickly established, which is better suited to the interests of the producer, processors and others in the distribution chain; any new equilibrium is likely to be headed by those merchants best able to adapt to new circumstances, and those merchants that approach business planning from a strategic perspective;
 - electronic marketing systems do not necessarily offer improvements in the prices achieved at auction (assuming product is currently being sold into a non-local market at present), but that they are likely to give greater stability to prices in times of change, and when the going gets tough;
 - the introduction of electronic marketing systems tend to herald a change in the employment structure of the industry, though not necessarily in the actual numbers deployed.

Strategic advantages

The above mentioned arguments pale into insignificance when set against the strategic advantages. These relate to two key threats to fishing industries located in peripheral areas:

- that the forces of centralisation within the fishery industry will further marginalise peripheral communities and fishery industries, as factors of scale and access to markets attract vessels and product away from peripheral regions, to a point of no return, where the ultimate viability of the peripheral port or industry is terminally threatened;
- that in the supply of fresh high value product for which there is established, strong and growing demand, a failure of local parties to facilitate the smooth, efficient and timely transfer of product from source of production to its ultimate market, will encourage those closer to the ultimate market to establish advance or satellite sourcing operations closer to the point of supply; this shift from local to distant control of the distribution system will work against the interests of the economy of the producing area.

Electronic marketing systems, by circumventing some of the disadvantages of scale, establish a backdrop for the continuing viability of peripheral fishery industries. By establishing and securing access to the ultimate markets for fresh and live high value produce, a peripherally based industry can protect its future interests, and capitalise on its key competitive advantages - its ability to catch, handle and deliver prime quality fresh and live seafood to a market that is showing all the signs of clearly recognising and being prepared to pay for such freshness and quality.

Finally, whilst there are fundamental drawbacks to the introduction of electronic marketing systems, our over-riding conclusion is that from a strategic point of view the fishery industries of peripheral areas of the European Union cannot afford **not** to embrace electronic marketing systems.