INTERNATIONAL COMPETITIVENESS OF THE IRISH SHELLFISH PROCESSING INDUSTRY – AN ADAPTED PORTERIAN ANALYSIS

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Introduction

This paper summarises the findings of a study of the international competitiveness of the Irish shellfish processing industry in Ireland, using an adapted Porterian model (Ryan, 1996). Porter's 1990 model of international competitiveness was modified and operationalised to determine the sources of competitiveness within the Irish shellfish processing industry.

Methodology

Porter's theory was modified in two respects; the EU was included as a third exogenous force and co-operation was incorporated into the model. Porter's theory was operationalised using a questionnaire, which was administrated personally to twenty-two managing-directors (from a population of twenty-nine) within the industry to identify its sources of competitive advantage. The potential sources of competitiveness of the industry were analysed using the Porter framework (See Figure 1) and are discussed in the paper using Porter's headings and definitions.

There has been considerable interest in the use of the Porter framework for analysis of the competitiveness of sectors in the period since this study was completed. The appropriateness of the Porter concept of clustering to explain Irish economic development was analysed in a series of case studies financed by the National Economic and Social Council (1998). A major finding related to the limited role of domestic demand, domestic rivalry and domestic suppliers and the greater role of foreign owned multinationals in Ireland in explaining competitiveness (ibid p. 5) The Porter framework was also used in a transnational collaborative study on competitiveness in the food industry (Traill and Pitts, 1998). A major conclusion was that "we disagree with what seems to be both a basic assumption and a main result of the Porter model – that competition alone is the driving force that explains competitiveness. In our studies, the ability to co-operate has been very important in the building of competitiveness, although that co-operation takes place in an increasingly competitive environment".

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(Lagnevik and Kola). They also found it necessary to redefine the "home base" concept of Porter (ibid). Despite these limitations they found Porter useful for analysis of competitiveness. Some of these findings are presaged in the study reported here.

The Irish Shellfish Industry

In recent years, the Irish shellfish industry has accounted for about 10% of national seafood production by volume and 17% of its first sale value. Although some species of shellfish such as lobster are most valuable in live form, the processing of shellfish has become a significant and important industry over the last decade. While the industry is relatively young, it has grown significantly with twenty-nine firms involved in shellfish processing in 1995. However, accurate or even regular figures on the tonnage and value of shellfish processed in Ireland are not available. The only estimate for the level of processing is that of the Department of the Marine for 1992 of 5,420 tonnes valued at £18.4 m which was projected to reach 11,420 tonnes by 1999 valued at £38.7 million (Department of Marine, 1995)

The level of processing varied among the firms due to the different shellfish being processed. Only 36% of the firms interviewed were committed to processing all the shellfish they purchase. 68% of the firms interviewed were involved in some form of secondary processing (either cooking, smoking or breading shellfish) as part of their production, with the remaining firms involved in the production of frozen shellfish.

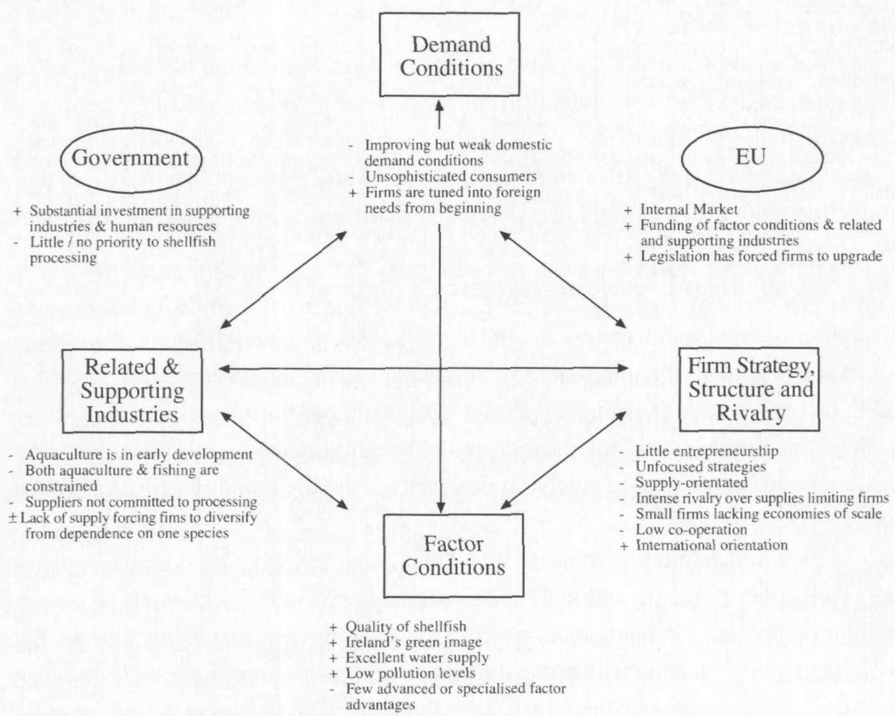
The Irish shellfish processing industry's diamond

Overall, from the research conducted, the Irish shellfish processing diamond was found to be weak. The majority of the determinants are not adding any competitive advantage and in fact some were causing competitive disadvantages for the industry. Yet 95.5% of the firms interviewed believe the industry will continue to be successful in the future. This strong belief was based solely on one factor – the high quality of Irish shellfish supplies.

Processors admit problems exist and that issues such as supply stocks, quality, new product development and marketing seriously need to be tackled. However, the continuous process of innovation needed for gaining and sustaining competitive advantage is not occurring within the industry as processors appear not to be changing their strategies to overcome these difficulties but seem to be accepting the environment as it is. The determinants within the diamond, while all are not weak and most are improving, are not generally creating unique competitive advantage for the firms. In addition, the interactions between the determinants are weak (as industry clustering and geographic concentration have not occurred). The key sources of competitive advantage and disadvantages can be seen in Figure 1.

While many factors are improving, they are not at a level of development which confers competitive advantage to the industry over its European competitors. Unique sources of competitive advantage within the industry are rare, with the only significant advantage being the superior quality of Irish shellfish supplies. Yet even this unique advantage is not being taken full advantage of. The EC Commission remarked that in competitive terms the Irish (fishery) industry is particularly vulnerable from foreign investors because its limited marketing and processing capacities are promoting the shipment of raw and part-processed material to more market-orientated processors in Europe, thus discouraging value-added activities within Ireland (Commission of the European Communities, 1992 p. 46)

Figure 1: The Irish shellfish processing industry's diamond



Demand conditions

The effect of home demand conditions on Irish shellfish processing firms is rather weak. This is due to two reasons: (i) the influence of supply is far stronger than demand, and (ii) the influence of foreign demand is far stronger than domestic demand.

Due to low consumption levels and small population, the quantity of Irish demand is weak. In addition, the quality of demand is also poor. Bord Iascaigh Mhara has spent considerable time and expenditure over the years on educating Irish consumers to the benefits of eating more fish but only a very slow increase in fish consumption has been achieved. While demand for fish is conservative, Irish people have even less of a tradition for eating shellfish. As a result, their knowledge of the species available, the cooking methods, prices or quality of shellfish is very limited. Because of this, Irish demand is not in any way stringent or challenging for Irish firms.

91% of the processors interviewed believed that Irish buyer needs and European buyer needs were different, citing the two main differences as being:

(i) Irish consumers are not as experimental with shellfish,

(ii) Irish consumers are not as quality orientated as other Europeans with processors believing that the Irish consumer has *"no real appreciation for shellfish"*.

However, it was acknowledged that the quality of demand is increasing as buyers are becoming more interested in quality, more aware of the variety available and are becoming more adventurous in their purchasing. The main explanations given for this increasing quality of demand are; (i) increased travel and holidays are broadening tastes, (ii) caterers are encouraging consumers to be more experimental by offering more variety, and (iii) retailers are forcing processors to cut their margins and lower prices.

The industry is not demand orientated with only six firms believing that meeting consumer needs is a top priority within the industry. Processors admit that supply is the main influence and that it is the scarcity of supply which forces firms to change and not the influence of buyers. Although monitoring of buyers among Irish processors occurs, it is informal (the most popular method is through channels of distribution – 19 firms are engaged in this method). However, foreign needs are the ones being monitored, with only 18% of the firms tracking Irish needs but 82% monitoring foreign needs.

Because domestic demand conditions are so weak, demand conditions do not influence factor conditions, related and supporting industries, firm structure or government. Because so few firms are demand orientated, competitive advantage from meeting foreign demand conditions is not really arising either. However, growth in demand in Europe has encouraged firms to set up to meet this demand and this has encouraged the level of rivalry within the industry. Due to the small domestic demand, firms have had no option but to be international or at least European in their outlook.

Factor conditions

Factor conditions are the strongest element within the diamond for Irish shellfish processing. Although there are weaknesses in factor endowments, a lot of attention and activity is being focused on upgrading factors both by industry and government in recent years. However, the industry appears to be focusing on upgrading factor advantages but selective factor disadvantages are not being overcome or even tackled by the industry.

The quality of Irish shellfish is cited as the greatest advantage the industry has over its European competitors and 90.9% of the processors see the industry putting top priority on quality. The next highest priority for the industry is on cost reduction (54.5% see this as a top priority) while the cost of raw material is cited as an advantage by 36.4% of respondents. The key disadvantages of the industry – the level of technology, cost of technology, market information available, access to capital, ability to develop new products – are not being tackled. While the processors were extremely critical of government and agencies over these issues, no one in industry is doing enough, with the majority doing nothing, to overcome these key problems.

At present little importance is placed on technology in the industry (only 22.7% believe technology to be a priority within the industry) but admit it will become more important in the future, though only 18.2% see their firms putting a top priority on it in the future. Instead of selective factor disadvantages forcing firms to adapt and innovate, processors are not attempting to overcome their disadvantages and are relying on government and other support services to overcome them. Processors believe the environment does not encourage innovation with the result that 72.7% of the firms believe the industry is only placing a slight emphasis on innovation. The processing sector has become protective in its thinking and wish to be dependent on government if crises occur. Contrary to the situation that most of the other fishery industries of Europe find themselves in, the Irish industry has scope for huge growth – what it lacks is the ability to retain and to attract sufficient trained middle managers and entrepreneurs to bring about these changes and the investment capital to finance these changes (Commission, p. 53).

The pressures from factor conditions are strong but many processors are ignoring them in the hope they'll diminish in importance or will be tackled by government or its agencies. The pressures from factor conditions have potentially a huge and positive influence on the way the industry could develop but long term efforts to overcome factor disadvantages do not appear to be forthcoming from the industry. As the European Commission (1992) point out to achieve structural and economic change will require resources well out of proportion to recent expenditures and investment. Not to restructure, however would lay the industry open to predation from stronger, cash-rich and more able and aggressive businesses from outside Ireland (ibid p. 58) which is already beginning to occur.

Human resources

According to the Commission of the European Communities (1992), as a result of industry-wide weaknesses in marketing, business management, entrepreneurship ... the Irish industry is particularly poorly equipped to participate in Europe, and the Single Market, on anything like an even basis (ibid p. 46). This belief is shared by the processors interviewed as the skill levels of employees and management within Irish shellfish processing firms are considered by processors not to be creating any competitive advantage for the industry. On staff, the picture is even more negative; their skills are considered by 45.5% to be a disadvantage, productivity is considered by 36.4% to be inferior to Europeans and the cost of labour is considered by 54.5% to be a disadvantage. Efforts at upgrading human resources are occurring and will continue with 22.7% of firms believing staff training to be a top priority for the firms in the future. Most of the training undertaken in the industry is on-the-job training and the most popular training activities are operator skills (50%), quality training (36.4%), production management training (18.2%), and hygiene training (18.2%). Despite the substantial investment by government at creating basic factor advantages in education, industry is not upgrading and specialising these abundant skills with only 13.6% of the firms involved in graduate placement or apprenticeship programs.

Physical resources

Irish shellfish processors see their main factor advantages to be connected with their raw material with;

- 77.3% citing the quality of raw material to be superior to European quality.
- 54.5% citing the availability of raw material to be superior to European availability.
- 36.4% citing the cost of raw material to be lower than European costs.

The geographical location and low coastal population allows Ireland an excellent opportunity to produce high quality safe shellfish. However, our location is considered a major disadvantage by processors due to transport costs and the lack of proximity to buyers. The cost of raw material is considered high due to increased competition among processors which has forced firms to diversify away from dependence on one or two species and broaden product ranges.

Knowledge resources

Knowledge resources within the industry are seriously weak. In fact the key disadvantages seen by the industry were the level of technology (86.4% cited it as a disadvantage compared to Europe), the cost of technology (77.3%), and the market information available (77.3%). There is a low level of contact and collaboration between the firms and research institutes leading to the non-development of advanced and specialised factors. Despite their criticism on the information available, few processors are attempting to overcome these weaknesses, with only 9.1% involved in gathering knowledge and technical information and only 18.2% developing ties with institutes. Despite the amount of specialised factor creation occurring, the industry is not taking advantage of the pools of knowledge available with 68.2% of the firms having no involvement with the universities, 81.8% having no involvement with the Regional Technical Colleges and 77.3% having no involvement with research institutes.

Capital resources

68% of the processors interviewed cited access to capital as a disadvantage for the industry compared to Europeans. Banks were criticized for being extremely wary of the industry with processors believing the industry is viewed as "a Cinderella industry by banks" with "banks taking the view if government won't back the industry the banks won't". In the future, 13.6% see finance availability as a serious problem for their firm.

Infrastructure

Transport costs were cited by 50% to be a disadvantage compared to Europeans. But many processors agreed that the transport industry has become very competitive recently and that this has had a large and positive influence on the shellfish industry.

Related and supporting industries

The main supporting industries to the shellfish processing industries are the fishing and aquaculture industries.

Fishing Industry

Despite the scale of fishing grounds adjacent to the Irish coast, up to the late 1960s there was little worthwhile fishing in the state. While the fishing industry has developed, it remains underdeveloped and suffers from major structural weaknesses. Due to the Common Fisheries Policy, the fleet, ports, and skill levels, the fishing industry is severely constrained. Shellfish exploitation has never developed to the same extent as pelagic or demersal (mainly due to government policy) but in recent years increased exploitation of inshore shellfish resources has been occurring as it is now proving to be financially attractive. However, the shellfish component of the fishing industry still remains poorly developed compared to those of other member states and relative to the extensive natural resources surrounding Ireland.

Aquaculture Industry

Despite the fact that Ireland has always possessed natural advantages for aquaculture production, the aquaculture industry was never developed to a standard similar to other maritime countries. However, huge growth has occurred in aquaculture in recent years, growing from eleven shellfish farms in 1979 (O'Connor *et al*, 1980) to 233 farms by 1994, due to significant funding by the government and the EU. However, the majority of investment has been to the disadvantage of shellfish farming as priority by government up until the late 1980s was placed on salmon farming. As a result, shellfish aquaculture has not developed to the same extent as finfish aquaculture in Ireland or shellfish aquaculture in other European countries. For example the capacity limit of oyster and mussel production in many European countries was reached during the late 1970s

(Sectoral Consultative Committee, 1984) but will not be reached in Ireland for many years. Although substantial leaps forward have been made, growth has been from a very low base and as a result Irish shellfish aquaculture is still in an early phase of development compared to the rest of the EU.

Despite the growing importance of aquaculture, over 68.2% of the firms are still processing "only wild" shellfish with a further 13.6% processing "mostly wild" shellfish. As a result processors have to cope with seasonal variability in size and availability of landings. Some processors believe that *"farmed shellfish does not yet have a good name or image"* and that *"farmers are only beginning now to get their act together"*. The majority of shellfish supplies are from domestic producers but processors believe that purchasing from the UK and Northern Ireland will increase. Shellfish suppliers are considered to be getting better and more organised but some processors considered them to be difficult, slow and disloyal. Support for processing among fishermen and farmers has never been very strong, as the fresh market often commands higher prices. As a result supply is a problem for the processing industry with many processors admitting purchasing takes up a significant proportion of their time. Although support among farmers for processing is growing (fluctuations in the fresh market has convinced many growers that increased production will depend on increased processing in Ireland), 31.8% of the firms believe raw material supply could be a serious problem in the future and 77.3% identified finding new raw material suppliers as a top priority for the future.

Supporting industries confer certain competitive advantages on the industry, as over 90% believe the quality of shellfish is superior to foreign supplies and 59% believe they are more reliable (but argue that this is only because they are closer). However, only 40.9% consider shellfish suppliers to be more flexible than foreign suppliers and only 9.1% believe them to be more innovative. Due to excess demand for shellfish supplies, power lies with the suppliers rather than the processors. Consequently the majority of firms (72.7%), (although all are involved in mainly long-term relationships usually since the firm was established), are only involved in buyer-seller relationships.

Due to the high demand for supplies the shellfish processing industry is totally supply orientated. Although a key weakness of the industry a few years back, due to scarcity of supplies Irish firms have now begun to move away from dependence on one species. Only one firm interviewed was involved in one species only with the majority of firms involved in either three (36%) or two species (32%). While this is leading to a lack of specialisation, product ranges are increasing as a result.

A cluster has not as yet developed around the fishery industry never mind the shellfish processing industry. The lack of clustering has been highlighted by the European Commission (1992) "much remains to be done to strengthen the post-harvest and services industries in the fishery sector. The ratio of sea jobs to shore jobs is estimated to vary in Ireland from 1:0.7 to 1:4.5 and the national average is only 1:1.5. This compares very unfavourably with more industrialised fisheries such as in France, Spain, UK and Denmark where the ratio may be as high as 1:5 or 1:7 (European Commission, p. 3) As most firms are located near supplies, the result is a fragmentation of the industry which is leading to the non-development of a wide or deep cluster.

Firm strategy and structure

Structure

- Type of firm: The majority of firms are private companies with a strong tendency towards being family run. The next largest group are cooperatives set up to process and market their cooperative members' catches.
- A surprisingly high number are run by non-Irish nationals.
- Shellfish sales: The majority are diversified into other processing such as finfish. Only 32% of the firms interviewed received 100% of their sales from shellfish.
- Size of firms: Irish shellfish processors are small firms. 50% of the firms employ less than 12 full time employees with the average firm employing 42 full time staff. There is a high level of temporary employment with the average firm employing 22 part-time staff. This reflects the seasonal nature of the industry's activities which respond to the availability of landings from the catching sector.
- Background of the MD: The most common background is that of fishing, which probably contributes to the strong supply orientation of the industry.
- International orientation: Shellfish processors, despite their small size are extremely internationally orientated and have been since their establishment. Only 18.2% of the firms generate all their sales from the domestic market and 54.5% of the firms concentrate solely on foreign markets.
- Goals: While it is difficult to determine what the key goals of the firms and the individuals running them are, it was evident from the interviews that the community and local employment were considered very important. Consequently, and also because many are family run businesses, long term commitment to the shellfish industry is high. Little national priority is given to shellfish processing industry although government is putting more of a priority on it in recent years. The status of working within the industry is very poor with many processors highlighting the fact that potential employees often take lower paying employment elsewhere in preference.

Strategy

The disadvantages and advantages arising in the diamond, especially from factor conditions and related and supporting industries, result in the majority of firms considering quality control, ensuring availability of raw materials, and competitive pricing to be important elements in their overall competitive strategy. Less emphasis is placed on retail brands (with 54.5% of the firms not considering it) or serving special market segments (with 22.7% of the firms not considering it), two strategies which appear to be ideal strategies, considering the high quality products being produced and the low marketing skills within the industry.

Despite the small size of the majority of firms, the role of co-operation appears limited. Many groups are available to aid processors but feelings among the industry about their usefulness are mixed. For example 45% of the firms are involved in one of the industry associations but of those involved 80% feel that they are of no benefit. Only 31.8% of the firms are involved with other entities in efforts to upgrade and create competitive advantage. The most popular activities undertaken are product development and adaptation, advertising and promotion, and market research.

Innovation within the industry is weak. While the majority are small and therefore flexible, entrepreneurship does not appear to be strong within the industry. The industry is organised along traditional, conservative lines and does not appear to have a sufficient number of successful entrepreneurs, visionaries and modern managers. Strategies appear to be the result of pressure from other factors within the diamond rather than from innovative thinking on how to overcome or take advantage of them.

Future strategies of the firms reinforce the status quo rather than challenge it. Although weaknesses and constraints within the diamond are becoming apparent, the majority of firms do not appear to be attempting or planning to overcome these constraints in the future.

Rivalry

Rivalry within the Irish shellfish processing industry is relatively high. 95.5% of the firms interviewed considered the industry to be intensely competitive and the belief is held that it will become even more competitive in the future. An extremely interesting aspect is that the processors view their main competition as competition for supplies rather than competing for consumers. More time is spent competing for supplies than competing for customers and as a result rivalry is based solely on prices offered to suppliers rather than on product range or services offered. While no firm continuously reviews their competitors, the firms gather information on their competitors from agents, market visits, suppliers and transport companies on an ad-hoc basis.

New Business formation

The Irish shellfish processing industry is a relatively young industry with the average time in existence of all firms interviewed only 29 years. New business formation has been very high over the last decade with over 36% of the firms interviewed set up in this period.

However, the majority of processors now believe the industry is saturated with only 32% believing there is a possibility of new domestic entrants and only 9% believing foreign firms may set up in the Irish market. The main barriers to entry put forward by processors were the scarcity of supply and the expense involved.

While there is strong rivalry, the main effect of domestic rivalry is the huge emphasis on supplies. Competition for supplies is extremely intense and much of the firm's time is concerned with supplies and not consumers.

Government

Despite Ireland's substantial marine resources, successive governments have never put huge priority on the fishing industry. As a result the needs of the fisheries industry and its sub-sectors were not met by successive governments over the years. The concentration in government policy over the years has been on increasing the fish catch and as a result the processing sector has not developed to anything like the same extent as the catching sector. In addition the main emphasis has always been on the finfish catch with little effort until recently being directed towards shellfish.

The state agencies have made substantial efforts on finfish development but little was done with the development of the shellfish sub-sector until the mid 1980s. There are three main state agencies involved in the industry; the Department of the Marine, Bord Iascaigh Mhara, and Udaras na Gaeltachta. Other agencies the firms have had dealings with include SFADCO, Forbairt and FAS.

In spite of the wide range of services offered by BIM, processors consider BIM not to have been significantly helpful in helping their firms improve their competitive advantage with 18.2% believing BIM has been only marginally beneficial and 40.9% believing them to have had some benefit. 18.2% found BIM to be reasonably significant. Comments on BIM were fairly negative with processors arguing that they are not aggressive or innovative enough and that they are not on the ground enough, with the belief held by some processors that BIM don't really know what is happening. Processors believe BIM should play a bigger role and substantially improve their practical end by offering more comprehensive, accessible and vital services to processors.

Each of the development agencies in the respective regions (IDA, Udaras na Gaeltachta, and SFDACO) are given the task of encouraging the development of industry within their particular domains and this has contributed to a lack of coordinated policy and a relative ease of entry to the sector. While this has aided new business formation, the lack of a coordinated policy over the years has been to the detriment of the industry. Processors highlighted the fact that it has often been the case that due to the lack of adoption of proper policies, government agencies have objected to the development activities of another government agency. Also serious concerns were expressed at the amount of regulations that are present, arguing that often as a result of complying with one set of guidelines, firms and farms are in breach of another. Consequently, O'Carroll has argued there is an urgent need for a review and rationalisation of national legislation and implementation for the shellfish industry as the lack of coordination, at present, is impacting negatively on the industry. (O'Carroll, 1996).

Government has had a large and fairly positive influence on the industry through the four determinants. Significant work has been accomplished in increasing and broadening the pool of basic and generalised factors available to the industry, specifically human resources. In relation to demand conditions, BIM has raised consumer awareness of Irish fish and shellfish both on the home market and foreign markets. However, domestic consumption has only risen slowly. Related and supporting industries have been influenced positively by the government, its policy, and programmes. Significant research, funding and assistance is given to both the fishing sector and especially the aquaculture sector. While the government has positively influenced supporting industries, this has had a indirect negative impact on the shellfish processing industry as the large emphasis on supporting industries occurred at the expense of the processing side. In relation to government's influence on the firm's strategy, structure and rivalry, its influence appears to be negative as firms have become dependent on government aid.

EU influence

The EU has had and continues to have a strong influence on the Irish shellfish processing industry through its influence on both Irish government policy and on the fishery industry with the Common Fisheries Policy (CFP), the significant funding it grants, and the legislation and directives the Community has issued over the years.

The fishery industry has developed considerably since its accession to the EC (1973) and its involvement in the CFP. Since joining the EC, the fleet has been strengthened in numbers and capacity, the aquaculture industry developed and processing establishments assisted in upgrading and expanding and this has been achieved largely with EC aid.

Due to the limits placed on traditional fisheries by the CFP, in theory fishermen should have moved or be moving towards shore-based activities (like shellfish and finfish culture, processing and fishery support services) which would have positive influences on shellfish processing through increased shellfish supplies, increased rivalry and the development of clustering. However, in practice, as pointed out by the EC Commission (1992) "as a survey of some of the more recent outflows from the sector demonstrates, this has not been achieved" (Commission, p 49). Through the CFP, the EU provides grant aid for the development of fisheries and fishery related activities. A variety of funding systems are in existence and substantial levels of funding have been approved for Ireland over the years. The substantial funding as well as aiding fishermen and farmers has greatly aided the development of fish processing in Ireland.

The EU is the greatest agent forcing change and innovation within the Irish shellfish processing industry. As The Marine Times (1995) notes, the process of change through the first half of the 1990s has been rapid, with the introduction of the Internal Market and the accompanying EU Directives, particularly in respect to standards of hygiene in the industry. In addition to forcing change with the CFP and legislation, the EU provides substantial funding as was seen above to encourage and aid change within the industry.

Concluding remarks

National competitive advantage grows out of conditions in a nation that signal, channel, or steer its firms to perceive opportunities for improvement and innovation and move early and in the proper directions to capitalise on them. Unfortunately these conditions are not prevalent in the Irish shellfish processing industry and appear unlikely to occur in the near future. Consequently, the future competitiveness of the Irish shellfish processing industry is uncertain.

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