

# Industrial Clusters in Local and Regional Economies A Post Porter Approach to the Identification & Evaluation of Clusters in North Dublin

By

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for the award of the degree of

**Doctor of Philosophy**

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## DECLARATION

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of *Doctor of Philosophy*, is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work

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## **Abstract**

### **Industrial Clusters in Local and Regional Economies A Post Porter Approach to the Identification and Evaluation of Clusters in North Dublin**

**Helen McGrath B Sc**

In a departure from the predominantly Porter (1990, 1998) influenced cluster studies that were performed on Irish manufacturing throughout the 1990s i.e. studies which examined primarily market based relationships in the national context, this dissertation has focused on local and regional industry concentrations and the nature of inter-firm relationships within those concentrations. Underpinning this approach is a broad theoretical framework that combines three streams of related literature: industrial districts, Porter's clusters and regional systems of innovation.

This alternative approach is applied to the local economy of North Dublin where analysis of region-specific employment data using location quotients indicates a number of spatially concentrated industrial sectors. We then pose the question: Do spatial concentrations of industry in North Dublin constitute clusters? Using a case study approach we answer this question in relation to three traditional sectors: Fish processing and preservation, Paper print and publishing, and Bakery food products. We find that, for the most part, spatial concentrations do not constitute clusters, at least not in the Porterian sense of the term. Despite this, elements or characteristics of clusters are identified in two of the three sectors.

Using a simple analytical framework based on *contextual* and *transactional* environments we compare and contrast the inter-firm dynamics in each of these traditional sectors. We identify a number of factors in each of the sector's transactional and contextual environments that have shaped the nature of interaction between and among firms and attribute the disparate trajectories in firms' interactive processes to these sectoral differences.

## Chapter 1 Introduction

### 1.1 What Do We Mean by a Post-Porter Approach to the Identification and Evaluation of Industrial Clusters?

The post-Porter approach adopted in this dissertation is cognisant of the fact that Porter is largely credited with the introduction of a general cluster concept, at the same time this approach acknowledges different yet related streams of literature that both pre and post date his seminal work and that add significantly to the formulation of as broad an interpretation of clusters as possible. In a departure from the predominantly Porter (1990, 1998) influenced cluster studies that were performed on Irish manufacturing throughout the 1990s – studies which examined primarily market based relationships in the national context – this dissertation focuses on local and regional industry concentrations and the nature of inter-firm relationships within those concentrations.

This dissertation is concerned with the exploration of clusters in the local and regional context focusing on one area in particular – North Dublin. Conceptual and theoretical reasoning aside, methodologically a post-Porter approach was necessitated by the fact that regional data (i.e. national and international trade flows for Irish regions) do not exist. Moreover, approaches based on quantitative analysis alone reveal only market based links between firms (i.e. value chains) and tell us little about how embedded value chains actually are (e.g. whether or not collaboration has developed as a by-product of economic interaction). Moreover, such analysis neglects non-market forms of co-operation that qualitative approaches can disclose.

National studies have concluded that Porter's cluster theory is not applicable in an Irish context and that a 'departure from Porter as a central plank of Irish industrial policy' (Clancy *et al*, 1998) is required. Acknowledging the findings of a series of empirical studies conducted on Irish industry throughout the 1990s (e.g. O'Donnellan,

1994, Clancy and Twomey, 1997, O’Gorman *et al* 1997, O’Connell *et al*, 1997)<sup>1</sup> the decision to adopt both an alternative methodology and theoretical framework was taken

In theoretical terms the emphasis in Porter’s original thesis was on non-networked market relationships among firms rather than co-operative forms of linkage in the development of competitive advantage. Revised thinking on his part has however acknowledged the role of co-operation. Other related streams of literature have more notably emphasised the importance of co-operation and suggest that it plays a pivotal role in, for example, small firm production systems (industrial district literature) and in learning and innovation (regional systems of innovation literature). Using these literatures as a theoretical base we evaluate cluster activity in terms of co-operation. It should be noted however that our post-Porter approach does not preclude the absence of clustering. Instead of reaching a null hypothesis i.e. that clustering is absent in a specific sub-sector of industry, we develop a rival theory that offers an explanation for the absence of co-operation and therefore clustering (see Chapter 9 – Inter-Firm Relationships in the Bakery Sector)

What can the industrial district and regional systems of innovation literatures bring to this post-Porter approach to cluster identification and analysis? Put simply, they offer a great deal more specificity and insight into the nature of inter-organisational relationships in clusters than a purely Porterian approach. The interconnectivity to which Porter refers - that must exist between co-located firms in order for a spatially concentrated group of firms to be deemed a cluster – is accorded a central role in these two related streams of literature. Not only this but the conditions that lead to *interconnectivity* e.g. co-operation are prescribed - namely trust, conventions and norms of economic interaction. These literatures and empirical studies based on their respective approaches have facilitated comparative analyses in each of the case studies (see Chapters 7, 8 and 9)

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<sup>1</sup> Where a journal article is referenced only the year of publication is detailed. The bibliography provides detail of exact page numbers. However, where a book is referenced the appropriate page numbers are provided in the main text

## 1.2 The Evolution of the North Dublin Cluster Study

Motivating the exploration of North Dublin's industry for cluster activity was the indication given by O'Donnellan (1994) that there may well be 'more subtle and localised clustering happening in some sectors that does make a difference to performance and that should be reinforced by government support for local specialised infrastructure'. Moreover, O'Donnellan (1994) highlighted the presence of sectoral pockets of firms in Dublin and suggested that such subtle and localised clustering was taking place within these sectoral pockets. O'Donnellan (1994) hinted at localised clustering rather than providing empirical evidence of it. In light of this an exploratory study was initiated to investigate further.

As stated above, national studies have overwhelmingly discounted the appropriateness of Porter's theory in the Irish context. In light of this and acknowledging the fact that many regional studies to date, although providing valuable insight into the workings of industry, have been limited to single sectors e.g. software manual printing industry (Jacobson & O'Sullivan, 1994), furniture manufacturing industry (Jacobson and Mottiat, 1999, Jacobson *et al*, 2001) and the computer industry (van Egeeraat and Jacobson, 2004), it was thought that a local cluster study – one which examines all sectors of industry for cluster development – ought to be conducted. Although all sectors were examined using quantitative techniques, a process of data reduction was employed so that a limited number of sectors could be analysed using qualitative techniques (i.e. interviews) and then from there three sectors became the subject of in-depth case study analysis (i.e. fish processing, printing and bakery).

The research questions that guided the investigative process were

- 1 *Do clusters of industry exist in North Dublin?*
- 2 *What theory can best explain the reasons for and processes of clustering or non-clustering as presented in North Dublin?*

4 The first question led us to an examination of employment data for North Dublin and the calculation of location quotients that provided quantitative evidence of sectors' spatial concentration in North Dublin relative to the nation. Qualitative investigations permitted the formulation of a short list of sectors that were then examined in more detail using interviews with experts. This deductive technique revealed that there was very little co-operation between and among firms. Where there was evidence of co-operation however a number of questions in the form of how and why were raised. In order to answer these questions three case studies were proposed. These case studies explore the nature of inter-firm relationships in the Fish Processing, Printing and Bakery sectors. While these case studies address their own sub-set of research questions the second of the two guiding research questions (as stated above) was addressed.

While Irish researchers have overwhelmingly concluded that Porterian clusters are not a feature of the Irish economy, some have suggested that sectors 'gain appreciable benefits from the presence of some form of groupings of connected or related companies and industries and from interactions between them' (O'Malley and van Egeraat, 2000). Jacobson *et al* (2001) indicate that the inter-firm dynamics documented in Co. Monaghan's furniture industrial district are linked to industrial development. They ultimately conclude that the survival of an individual firm 'is very much connected to the relationships it has forged with other firms'. This thesis examines these ideas more deeply by reviewing and developing the relevant literature and focusing on inter-firm dynamics in the three case studies.

### **1.3 How is This Study New?**

Although research has previously been conducted on local and regional clustering in Ireland using an alternative framework to that of Michael Porter's, namely an approach based on the industrial district literature, this thesis is the first to examine, in Ireland, all of a local economy's industrial sectors for cluster activity. Moreover, the framework for examination and analysis is broader than any other previously used as it combines three related streams of literature: Porter's clusters, industrial districts and regional systems of innovation.

Individually, the three case studies contribute to knowledge of inter-firm dynamics specific to a location and a sector. By comparing and contrasting the nature of inter-firm relationships in the three sectors – fish processing, printing, and bakery, we identify the causes of disparate trajectories in firms’ interactive processes. Although these findings cannot be generalised they make a significant contribution to knowledge by building on and adding to existing cluster theories.

Furthermore, our acknowledgement that clusters are not a feature of every local and regional economy has enabled us to contribute to knowledge of how and why clusters fail to emerge detailing the sectoral (transactional) and locational (contextual) factors at play.

The end result is a piece of work that adds significantly to knowledge of local economic development in Ireland. In the context of current enterprise and cluster development policies (see Section 3.3.2 Chapter 3) and the history of over-reliance on foreign owned multinational enterprises (MNEs) for economic development, the findings of the fish processing and printing case studies (Chapters 7 and 8) show that economic development is possible based on co-operation among indigenous firms without MNE involvement.

#### **1.4 Structure of the Dissertation**

Chapter 2 presents a review of the literature on clusters. It explores the definitions, types and general characteristics of clusters. It examines inter-firm dynamics in some detail focusing particularly on the importance of co-operation and sheds light on its different forms i.e. horizontal and vertical, formal and informal. Included is a discussion on the facilitating mechanisms for the development of co-operation, namely trust. Consideration is also given to the factors that lead to non-co-operative processes that ultimately result in firms acting in a “stand-alone” capacity. The importance of local and regional clusters is then discussed in the context of the localisation-globalisation debate that serves to justify an examination of local industry for cluster development. The three related streams of literature – Porter’s clusters, industrial districts and regional systems of innovation are then combined to form a theoretical framework. Using two conceptual tools i.e. *contextual environment* and

*transactional environment* an analytical framework is proposed for guiding the analysis of inter-industry differences (as presented in Chapter 10)

Chapter 3 examines clusters in the Irish context. It outlines how industrial policy and development in Ireland over the years have shaped the present day industrial climate. This chapter highlights the historic and present day over-reliance on foreign direct investment (FDI) – particularly within North Dublin. In this context the examination of co-operation among indigenous firms is made all the more pertinent. Research to date on clusters in Ireland is also reviewed and discussed. This further suggests that Porter's definition of clusters has less relevance in the Irish context than other, perhaps looser, definitions of agglomerative development. The decision to focus on a mix of development models is affirmed.

Chapter 4 details the methodology employed in the research process as well as a review of cluster identification methods in general e.g. top down versus bottom up approaches, meso versus micro analysis, input/output tables, location quotients (LQ) and the use of expert opinion through interviews. The research phases are outlined and the data relied upon are detailed. The case study design for each of the three case studies is described as well as data collection procedures, triangulation of data sources and techniques used to analyse data – primarily pattern matching. The threat of mismeasurement is acknowledged and the four tests used to address reliability and validity are outlined.

Chapter 5 presents the industrial profile of North Dublin. Here, the absolute and relative importance of North Dublin's industrial sectors is highlighted. The results of the quantitative analysis are presented and the sectors that contain three or more firms, have a LQ above 1, and have experienced growth in employment terms and/or firm numbers, are highlighted as having the greatest potential for cluster activity.

Chapter 6 introduces the three case studies and outlines the reasons for not pursuing analysis of other spatially concentrated sectors in the same in-depth manner.

Chapter 7 presents the case study on inter-firm relationships in the fish-processing sector. This chapter is primarily concerned with the evolution of a leader firm-



supplier relationship, namely that between a retail buyer and a fish processing supplier. However, the nature of other relationships, both vertical and horizontal, between local and non-local firms including non-firm organisations such as trade associations, is also subject to examination. A distinction is made between relationships co-ordinated on an organic basis i.e. through social trust and norms of economic behaviour and more consciously co-ordinated mechanisms such as dyadic trust between a leader firm and its supplier. We show that the former is a powerful force in the creation of a co-operatively competitive environment in which commercial information is shared. At the same time, relationships that are subject to more consciously co-ordinated mechanisms, yet still classed as *social networks*, facilitate the sharing of technical information that ultimately result in innovation.

Chapter 8 presents the case study on inter-firm relationships in the printing industry. The relationship between four North Dublin based firms and one South Dublin based firm is focused on in particular. The evolution of a strategic horizontal alliance called the Printing Consortium of Ireland (PCI) is traced i.e. the motives for the creation of the consortium, the environmental conditions leading to its development and its governance structures. Particular attention is paid to the role of interpersonal trust fostered through trade association participation. The performance of this co-operative venture is assessed. To give context to the inter-firm relationship a review of the sector in terms of industry performance, structure and history is presented.

Chapter 9 presents the case study on inter-firm relationships in the mature sector of bread, fresh pastry goods and cakes (NACE 1581) also known as the bakery sector. Characterised by a deep sense of rivalry and secrecy at both the firm and supporting organisation levels, the bakery sector comprises mostly stand-alone firms i.e. firms whose transactions are conducted at arms length and co-ordinated by the market. In this chapter we ask why co-operation has failed to emerge in the industry generally and specifically among the spatially concentrated group of firms in North Dublin. For answers we examine the industry's composition, its history, structural changes and the extent of organisational change.

In Chapter 10 we compare and contrast the inter-firm relationships in North Dublin's fish processing (Chapter 7), printing (Chapter 8) and bakery (Chapter 9) sectors. In

doing so, we establish what has caused different inter-firm dynamics to emerge. We identify a number of factors in each of the sectors' transactional and contextual environments that have shaped the nature of interaction between and among firms and attribute the disparate trajectories in firms' interactive processes to these sectoral differences. Through this evaluation we state clearly the contribution made by the case study findings to the general discourse on modes of local cluster development and in particular their contribution to knowledge of local economic development in Ireland. Within this clarification process an assessment is made as to whether the inter-firm dynamics documented constitute industrial clustering.

Chapter 11 presents the conclusions of the research.

## **Chapter 2 Literature Review and Theoretical Framework**

### **2.1 Introduction**

This chapter reviews the various cluster literatures – focusing on three in particular – Porter’s clusters, industrial districts and regional systems of innovation. The literature is used to formulate definitions and categorise clusters by type. The dynamics of clusters are explored with a strong emphasis on the role of co-operation and trust within inter-firm relationships. We suggest that it is co-operation that is at the centre of successful inter-organisational relationships – regardless of the cluster formation (i.e. Porterian clusters, industrial districts or regional systems of innovation). Using conceptual and theoretical reasoning we show how important the study of local and regional industry for cluster activity is and why we should be concerned with empirical analysis at such geographical levels.

In addition to this we explore the reasons why clusters fail to emerge and furthermore why some firms operate on a stand-alone basis i.e. on the basis of arms length market transactions or “black box relationships”. These issues are of relevance given that elements of localised clustering are uncovered in only two of the three case studies i.e. fish processing and printing (Chapters 7 and 8) and a lack of cluster activity is revealed in the bakery industry case study (Chapter 9). Using a set of conceptual tools – transactional environment and contextual environment – we devise a simple framework based on the content of this chapter for the analysis of inter-industry differences in Chapter 10.

### **2.2 Definitions of Clusters**

Following Porter’s (1990) introduction of the concept, examples of successful clusters have been documented in many parts of the world and in many different industries,

both high-tech, science based (e.g. in Silicon Valley (Saxenian 1990, 1994) and traditional (e.g. in the Third Italy (Piore & Sabel, 1984, 1989). The use of the term 'clusters' in the academic literature usually follows Porter's (1990, 1998b) definition. He defines them as 'geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in industries, and associated institutions'<sup>1</sup> (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate'. Clusters are, in his view, the basis for international competitiveness. Although Porter stresses the importance of geographical proximity his unit of analysis is the national rather than the regional or local scale and 'clusters are conceived as broad industry groups linked within the overall macro economy' (Feser, 1998). More broadly, clusters can also refer to various other forms of industrial agglomeration such as industrial districts, industry networks and regional systems of innovation, some of these concepts have a history that goes back to the 19<sup>th</sup> century.

Beigman & Feser (1999) describe a regional cluster as one 'whose elements share a common regional location, where region is defined as a metropolitan area, labour market, or other functional economic unit' while Isaksen & Hauge (2002) define it as 'a concentration of interdependent firms within the same or adjacent industrial sectors in a small geographical area'.

### **2.2.1 *Interpreting Geographic Concentration***

The use of the words 'geographic concentrations' in Porter's definition makes us immediately aware that firms and actors within clusters share some common 'space'. That space is open to interpretation and can imply different territorial levels depending upon the focus of analysis. Mottiar & Jacobson (2002) make a distinction between 'place' and 'space' suggesting that the latter refers to the 'wider arena in

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<sup>1</sup> Edquist (2001) is critical of the literature in general for not distinguishing between 'organisation' and 'institution'. *Organizations* are formal structures, usually with an explicit purpose. They are the actors, like firms, universities, state innovation agencies and financial services companies. *Institutions* are 'the rules of the game' that is, the sets of common habits, routines, established practices, rules, or laws that regulate the relations and interactions between individuals, groups and organisations' (Edquist, 2001). Many writers, Porter included, seem to use the term 'institution' to refer both to the rules of the game and to formal structures.

which firms produce' (that is the national and international arena) with the former referring to 'the local area in which firms are located'

### **2 2 2 *Local Clusters***

It is 'place' which we are most concerned with in this study. Clusters emerge and grow according to Isaksen & Hauge (2001) because of place specific conditions including the 'availability of raw materials, specific knowledge in R&D organisations or traditional know-how'. The conditions causing clusters to emerge and grow may not be uniformly distributed across all regions and places. This leads to the conclusion that 'some regions will win at the expense of others' (Hudson, 1999), depending upon their particular 'endowment of production factors' (Vesti, 2002). Therefore it is reasonable to assume that clusters are not an element of every regional and local economy and it is important not to prejudice any empirical investigation by assuming otherwise. In adhering to such a principle the research methodology herein (see Chapter 4) was formulated.

Rosenfeld (2002) has suggested however, that clusters may be induced by careful policy design and implementation. There is some dispute about this, Steiner (1998 pp14-15) argues that 'no kind of policy can substitute for the dynamism and social organisational skills that must exist on a local and regional level for cluster-building policies to succeed'. This of course begs the question as to whether policy can engender – among other things – dynamism and social organisational skills.

### **2 2 3 *Clusters as Economic and Territorial Concepts***

Although our focus of analysis is the regional and local scale it is essential that we are aware from the outset that clusters can exist at other territorial levels (national or international) and within a dimension other than the geographic, namely the economic (Feser, 1998: 25). Feser (1998) suggests that certain clusters may not be 'localised in scope' and that depending upon the particular sector characteristics, industry may be more economically rather than geographically clustered. What this means is that firms may be closely associated with one another in relation to the production or distribution of a good or service, but may nevertheless be widely dispersed spatially.

They may, in fact, be more or less clustered on either of these dimensions. In addition, the spatial dimension itself can have different scales, so that an industry can be clustered nationally, but not locally or regionally (and vice versa)

Fcsel (1998) touches on, without explicitly stating, the notion of organisational proximity without spatial proximity, this is a notion that Heanue & Jacobson (2002) have explored in the Irish context. They suggest that a process of innovation and learning (themselves the products of clustering) can be developed through networked firms 'in the absence of spatial proximity'. They further suggest that 'research attention may be too focused on proximate clusters of enterprises' given the nature of Ireland's open economy and the fact that it is increasingly seen as a region within the European Union.

However, if a particular sector is economically clustered – in other words if it is characterised by deep vertical and horizontal linkages and relationships and there is a significant sectoral presence (implying a large number of firms) – in a particular locality then there is reason to favour the local territorial scale over the national (Hudson, 1999)

### **2.3 Cluster Characteristics**

In order to justify our exploration of clusters at a local and regional level there is a need to outline both the theoretical and conceptual reasoning for favouring these territorial scales over national or even international levels. Before doing so however, we need to expand on our definition of clusters by exploring the nature or characteristics of clusters. There are many different views on the prerequisite conditions for clusters to come into existence. Marshall (1898) identified six main factors in the localisation of industry. These were physical conditions, demand conditions and political/cultural conditions, which he called causes of localisation, and externalities arising from knowledge transfers, growth of 'subsidiary trades', and the local market for special skills required by the industry, which he called the advantages of localisation (Jacobson *et al*, 2002). Section 2.5.4 discusses Marshall's localisation economies in more detail.

Rosenfeld (1997) provides a list of what he considers to be the main prerequisites for clustering synergy: critical mass of similar or related economic enterprises, specialised services and infrastructure, rapid exchange of information and knowledge, a skilled workforce, a strong sense of competition between firms, high rates of new business formation, social infrastructure and a culture of trust to facilitate inter-firm co-operation. Clusters can be categorised in terms of 1) Size and scale, 2) Stage of development, and 3) Type. Within type, we distinguish between the role of indigenous and foreign owned firms, SMEs (small to medium sized enterprises) and large multinational enterprises (MNEs) and their respective contributions to cluster development. We also distinguish between clusters in high-tech industries and those in more traditional industries.

### **2.3.1 *Size and Scale of Local/Regional Clusters***

Porter (2000) describes clusters as 'critical masses of unusual competitive success in particular business areas'. The term 'critical mass' implies levels of agglomerations of successful firms required for sustained growth and development. The framework that Porter applies in *The Competitive Advantage of Nations* is clearly 'set at the level of the nation' (1998: p.11) and as outlined earlier is orientated towards internationally competitive industries. Despite this, Porter (2000) later acknowledges that 'clusters may occur in many types of industries, in smaller fields, and even in some local industries such as restaurants, car dealers and antique shops' (2000). We accept this later refinement and agree that clustering processes are not exclusive to large-scale internationally competitive industries and that cluster development can take place in small-scale, localised industries. This is something that Rosenfeld (1997) highlighted long before Porter, suggesting that 'the scale of employment [need] not be pronounced or prominent' and that firms' ability to produce synergy through their 'geographic proximity and interdependence' was more important. Indeed, description and analysis of these processes go back at least to Marshall (1898) in the late 19<sup>th</sup> century.

### **2 3 2 *Stages of Cluster Development***

In addition to the different scales at which cluster development can take place i.e. local, regional or national level, there are a number of stages to the cluster development process that should be noted. Rosenfeld (2000) outlines four stages the first being the embryonic, which through ‘innovations, inventions or inward investment’ evolves into a growing cluster. A cluster at the growth stage is one ‘where markets have developed sufficiently to spin off and attract imitators and competitors’ so that entrepreneurial activity is stimulated. A growing cluster develops into a mature cluster ‘when the processes or services become routine’ and when more ‘imitators enter the market’. Only when ‘products become fully replaceable by lower cost or more effective substitutes’ does the maturing cluster enter a period of decay or decline (Rosenfeld, 2000)

### **2 3 3 *Cluster Types***

- i) ‘Overachieving’, ‘underachieving’ and ‘wannabe’

Drawing on the work of Michael Enright, Rosenfeld (1997, 1995) developed a typology of clusters. He describes three types of clusters: working or ‘overachieving’, latent or ‘underachieving’ and potential or ‘wannabe’ clusters. The inability of clustered firms to realise benefits is due, Rosenfeld suggests, to ‘weaknesses and gaps in social infrastructure’. The theoretical and empirical underpinnings of such a statement can be traced to the industrial district literature where social relations and the organisation of economic relations are intertwined (Pyke & Sengenberger, 1992, p19). Pyke & Sengenberger (1992, p19) add that ‘economic behaviour and standards are likely to be at least in part shaped by community norms and expectations, producing customary arrangements and ways of doing business’.

The overachieving cluster is a cluster in the mature or advanced stage of development where ‘groupings of firms have the social infrastructure and generate networks that keep information flowing continually, spark new ideas, and encourage new firm start ups’. They have in effect realised their full potential. Rosenfeld cites the electronics industry in California’s Silicon Valley as an example of a working cluster.



Underachieving clusters, like working clusters, have the scale and opportunities for cluster activity but lack the 'social fabric and community norms that promote interaction among workers and employers' (Rosenfeld, 1995) (In Steiner's (1998) terms, the underachieving cluster lacks dynamism and social organisational skills )

Finally, Rosenfeld describes potential clusters as those that display some of the characteristics of working clusters but, like underachieving clusters, lack certain elements. These potential clusters Rosenfeld suggests are usually in sectors which have been selected by states to be developed into clusters but do not have all of the 'prerequisite conditions' (see above). What Rosenfeld (1995, 1997) is suggesting is that sectors may display one or a number of these conditions but not all and are therefore classed as potential rather than working clusters.

Within cluster type there are further considerations which Rosenfeld does not expand upon but which are well commented upon by others. Among the distinctions of potential relevance in the context of this dissertation, are those between indigenous firm and foreign owned firm clusters, SME and large firm clusters, and high-tech/science based and traditional sector clusters.

The aim of this section is to dispel some of the myths about clusters: a) that they only comprise indigenous firms; b) that they only comprise SMEs; and c) that they are predominately found in either high tech or low tech industries when in fact there is evidence of clustering in both and, in some cases between both.

#### ii) Indigenous and foreign owned firms in cluster development

According to Porter (1998, 19) 'the home base is the nation in which the essential competitive advantages of the enterprise are created and sustained'. The home base industries to which Porter refers are essentially domestic or indigenous industries (Clancy *et al*, 2001). Porter's acknowledgement of the role of foreign MNEs in cluster development is minimal and pertains only to foreign MNEs that 'become part of the host country' (Clancy *et al*, 2001). Porter's explanation of this is as follows: 'As long as the local company remains the true home base by retaining effective strategic, creative and technical control, the nation still reaps most of the benefits to its

economy even if the firm is owned by foreign investors or by a foreign firm' (1998, 19) Unless foreign firms 'make permanent investments in a significant local presence' (Porter, 2000) then they, in Porter's opinion, have little to contribute to local cluster development. This, according to Clancy *et al* (2001) is 'particularly problematic in the Irish case since inward direct investment represents a very large segment of Irish economic activity'. The general exclusion by Porter of subsidiaries of MNEs from a country's clusters, was criticised soon after the publication of the first edition of his book in an extensive review by Dunning (1992). Dunning explicitly revised Porter's framework to include MNE subsidiaries.

Despite Porter's apparent dismissal of foreign MNE contribution to cluster development, there is a growing body of literature which suggests that foreign-owned MNEs can and do make a valued contribution to local economic development. According to Birkinshaw (2000), foreign investment has a mostly positive impact on cluster development and upgrading especially in rapidly growing industries. The presence of foreign owned MNEs in a given locality Birkinshaw suggests improves the 'attractiveness' of the local or regional cluster and 'raises awareness' of the industry or cluster on a world scale.

Multinational corporations are, in many regions, the main source of new technology and collaboration between multinational enterprises and local firms provides 'vital technological and organisational training which local firms use to strategically develop market networks and innovative capacity in the home market' (Zhou & Xin, 2003). This is what Enright (2000) describes as a 'dependent' model – a model in which cluster based development relies solely on attracting the facilities of foreign MNEs to induce regional development. Enright (2000) suggests however that there may be an alternative – an interdependent model – in which the foreign owned firm plays a critical role in the cluster and where its location in the cluster plays a critical role in the strategy of the MNE.

Markusen (1996) describes a number of variant models of behaviour with regard to large firm or MNE behaviour. Within her 'hub and spoke' industrial district, core or 'anchor' firms are embedded non-locally and have substantial links with suppliers and competitors outside of the district. Despite exhibiting 'intra-district co-operation' it

will generally be on the terms of the hub firm' The strategies of the dominant firms in such a model will influence the long-term growth prospects of the locality/region 'Satellite platforms', that comprise 'branch facilities of externally based multi-plant firms', in contrast to hub and spoke districts are devoid of links or networks within the region Connections within this district type are predominantly to the parent corporation or to branch plants located elsewhere This indicates a lack of embeddedness – an issue often raised in the context of foreign firm involvement in industrial clusters

A lack of embeddedness may prevent cluster development of any real significance from taking place Apart from providing employment to the local community the impact of a MNE on a local area may be minimal due to its lack of autonomy in sourcing supplies MNEs tend to be tied to the centralised supplier base of their parent company and can therefore act as a barrier to local sourcing (Brown, 2000)

### iii) Firm size The role of SMEs and larger firms in clusters

In addition to firm type there is a need to note the contribution of firms of varying sizes i.e. SMEs and larger firms, to the cluster development process If we look towards the Italian industrial districts as an example of cluster formation we see that small to medium sized enterprises have the greatest potential for employment growth and have the capability of achieving greater efficiencies and more flexibility than larger enterprises (Sengenberger & Pyke, 1997, 7) For the most part the 'population of firms' (Becattini, 1990 p39) to which the industrial district literature refers are SMEs (Paniccia, 1998)

The contribution of SMEs to economic development is not exclusive to the Italian industrial districts Morgenroth and O'Malley (2002) suggest a link between SMEs and regional growth and development in Ireland This conclusion was reached when smaller firms examined over a period appeared to contribute more to employment growth than larger firms Having said that however, Lazerson and Lorenzoni (1999) warn that 'although the vast majority of industrial districts firms are relatively small, it is a mistake to assume that they are the dominant norms [In fact,] larger firms frequently organise production among groups of smaller firms' This introduces the

notion of leader firms in local economies – a topic that is discussed further in Section 2.10.3 and Chapter 7. While SMEs appear to contribute most to cluster development, the role of larger firms should not be discounted especially – but not only – in the context of leader firm activity.

It is interesting to note that in empirical investigations conducted on 34 European regional clusters, Isaksen & Hauge (2001) found that clusters are increasingly made up of SMEs. From this we can conclude that while SMEs may be the predominant firm type in a cluster, there may be a small number of larger firms that ‘lead’ these smaller firms.

#### iv) High-tech and traditional

Finally, we turn our attention to clusters centred on high-tech or science-based industries and clusters which rely on ‘more traditional, local skills’ (Isaksen & Hauge, 2001). Isaksen & Hauge (2001) in particular have noted differences in the nature and operation of these two types of cluster.

They found (from a survey of 34 European regional clusters) that high-tech and traditional clusters differed in age, the form of transaction most frequently used, the type of local collaborators used and the type of innovation activity which they participated in. Science-based clusters were found to be predominantly young, i.e. they were established after 1970. Traditional clusters, on the other hand, varied in age, with clusters having been established before and after 1970. Traditional clusters conducted transactions through long-term market relationships, while science-based clusters relied on these and other transaction forms such as temporary coalitions. Clusters in traditional industries view service suppliers and public authorities as important local collaborators, while clusters in more high-tech industries use R&D institutions as well as public authorities to form collaborative ties.

The two cluster types are very different as regards innovation activity, in that science-based clusters tend to use ‘technology generators’ to create changes in the organisation of the production process and in product development. Isaksen & Hauge (2001) define ‘technology generators’ as radical innovation processes whereby totally

new products are designed and manufactured. Traditional clusters on the other hand rely on incremental innovations i.e. more cautious, gradual improvements to processes and products. The most common area of innovation within traditional clusters in their study is not in product development or production processes but in methods of marketing and distribution.

Despite the fact that innovation is more often than not associated with R&D firms, large multi-national type enterprises and more recently high tech or science-based industrial sectors, innovative activities, as Blumentritt (2004) reminds us, are not just about the development of new products or services. Firms, he suggests, can be innovative in many ways for example by creating new or improving support services, delivery mechanisms, improving the efficiency and effectiveness of internal processes and discovering new ways of establishing and maintaining relationships with customers. This ties in with the recent findings of the PILOT<sup>2</sup> project where the definition of innovation is broadened so that it is not confined to science-based high tech industries or to expenditure on R&D (Bent and Laestadius, 2005) (See Section 2.9 for further discussion on innovation).

Given that many of the sectors displaying a concentration in North Dublin (see Chapter 5) can be classed as traditional, these characteristics have been taken into consideration in the assessment of cluster activity.

## 2.4 Dynamics of Clusters

In building a broad understanding and multi-interpretive approach to clusters there is a need to focus on some specifics in particular the dynamic or inner-workings of cluster formations. We know that a cluster is not just a group of co-located firms in the same or related industries. What makes a spatial concentration of firms a cluster are the links or interconnectivity among firms and between firms and supporting organisations. The interconnection to which Porter (1998: 73) refers is characterised by 'vertical and horizontal relationships'. Porter indicates that a 'nation's successful

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<sup>2</sup> The PILOT project – Policy and Innovation in Low-Tech – is a European Commission funded project involving eleven European Union countries. The project has highlighted the contribution made by low-tech industries not only to employment and growth but also to the creation of knowledge. See [www.pilotproject.org](http://www.pilotproject.org) and Hirsch-Kremsen *et al* (2005).

industries are usually linked through vertical (buyer/supplier) or horizontal (common customers, technology, channels, etc ) relationships' (Porter, 1998 149)

Enright and Roberts (2001) agree that both 'linkages and interdependencies among actors in value chains' are at the centre of the cluster concept. However, they believe that the dynamics of clusters have moved away from traditional 'horizontal networks of firms operating in the same end-product market in the same industry group' and describe a modern concept of clusters where dissimilar firms and institutions come together to collaborate on 'R&D, innovation, commercialisation and marketing to produce a range of new or re-engineered products and services which are often cross-sectoral in nature'

The more traditional, vertical economic linkages should not be discounted however, as firms will always need suppliers from whom to source their inputs and buyers to whom they can sell their outputs. In fact, suppliers that are also collaborative partners play a key role in innovation processes according to Edquist *et al* (2002). They found that collaboration between buyers and suppliers of material and components as well as suppliers of machinery led to product innovation in East Gothia, Sweden. Whether linkages tend to dominate the regional economy rather than the local – or whether they are in fact primarily international – is a matter for empirical investigation.

Like Enright & Roberts (2001) Rosenfeld (1997) emphasised that clusters contain 'active channels' for 'business transactions, dialogue and communications'. A cluster therefore, is something more than a spatial concentration of firms and is based on systemic relationships among geographically bound firms. These relationships can be built on 'common or complementary products, production processes, core technologies, natural resource requirements, skill requirements, and/or distribution channels' (Rosenfeld, 2002)

'Interactions among firms in an industrial cluster are considered to be primarily market based and of a non-networked nature' (Jacobson *et al* 2002), whereas the relationships in industrial districts use networks as a mechanism to develop 'relational contracting, collaborative product development and multiplex inter-organisational alliances' (Staber, 2001). Trust and co-operation co-exist with competition in an

industrial district unlike in a Porterian industrial cluster where rivalry among firms is thought to be a key determinant in its formation (Jacobson *et al*, 2002) It should be noted that even Porter's own definition of clusters has changed over time Co-operation is now more clearly an element of his cluster (1998a, 1998b), but he sees it as particularly important in vertical relationships In industrial districts it is present in both vertical and horizontal relationships (Brusco, 1992)

Isaksen & Hauge (2002) emphasise the importance of networks to regional clustering suggesting that regional clusters comprise local networks in the form of production systems for example However, industry networks (local or otherwise) are not limited to production linkages, they can comprise 'a set of organisations (e.g. firms, unions, state agencies, associations) that have developed recurring ties (e.g. buyer-supplier relationships, joint activities, informational ties) when serving a particular market' (Ebers and Jarillo, 1997/1998)

Isaksen & Hauge (2002) in advocating the use of 'precise definitions' to aid empirical exploration, suggest that the dynamic in a *regional cluster* is limited to the spontaneous interconnectivity among a specific group of actors (i.e. firms (and not say between firms and supporting organisations as indicated in Porter's definition of industry clusters) More organised co-operation amongst firms that is underpinned by prevailing institutional structures (i.e. trust, norms and conventions) and that facilitates firms' innovative activity is defined by them as a *regional innovation network* When formal knowledge creating and diffusing organisations such as universities, colleges, training organisations and business associations co-operate with firms to support regional innovation the term used to describe this dynamic is *regional innovation system*

The dynamics of regional systems of innovation share some of the characteristics typical of Porterian clusters and industrial districts in that interaction amongst firms and supporting organisations is a feature and linkages between actors that are based on trust and co-operation The fundamental difference however, is that the objective and outcome of such networks and interaction is innovation (Andreosso & Jacobson, 2005 p210 referring to Cooke, 2001)

## 2.4.1 *The Importance of Co-operation*

In his first edition of *The Competitive Advantage of Nations*, Porter (1990, p107) outlines the significance of ‘rivalry at home’ and how it has ‘a profound role to play in the process of innovation and the ultimate prospects for international success’ Andricosso & Jacobson (2005, p206) in referring to the work of Lazonick (1993) suggest that the domestic rivalry to which Porter refers is actually co-operation. In later work Porter (1998b) expressly states the importance of co-operation – describing it as the ‘social glue’ that binds clusters together. He describes the emergence of an environment where competition and co-operation co-exist. In so doing he stresses the importance of personal relationships, face-to-face contact and the need to ‘foster ongoing relationships’ as well as a collective approach to industry needs.

Sengenberger & Pyke (1992, p16) stress that co-operation can act as a mechanism for ‘improving the competitive capacities of small firm communities and networks’. They outline the various forms that co-operation can take.

The forms co-operation can take are several, subcontracting and dividing up of orders, allowing individual companies to accept orders beyond their normal manufacturing capacities, collaboration between individual firms at different stages of the production cycle whereby “partners” develop together the most appropriate technical specifications and designs, collaboration to train labour for the district as a whole. Whereas in a competitive environment small firms, unable to afford to train their own labour, will compete strongly to take as much as they can from an ever-diminishing pool, in a regime of co-operation and trust the same firms will combine their resources to ensure a collective provision of skills, the collective provision of services and the kind of co-operation that takes the form of “good neighbourliness” – lending of tools, helping out with spare parts, passing on advice, assistance in emergencies, etc (Sengenberger & Pyke, 1992, p17).

It is clear therefore that co-operation creates positive externalities and can produce economies of scale and scope. Underpinning ‘the advanced forms of co-operation’



that are found in Italian industrial districts is the 'social community holding supportive sets of values' (Sengenberger & Pyke, 1992, p19)

The emphasis on collaborative and co-operative relationships as opposed to purely market based inter-firm relationships in the cluster literature can be attributed to these economies that are created by such depth of interaction. It is well documented that collaborative relationships amongst economic actors, such as buyers and suppliers for example, within regions can lead to knowledge spill-overs, localised learning, improved innovative capacity and innovation processes that constitute systems of innovation (e.g. Garibaldi & Jacobson, 2005, Capello, 2002, Koschatsky, 1999, Maskell & Malmberg, 1996). In Garibaldi & Jacobson's (2005) empirical investigation of European SME innovativeness and competitiveness the findings show that co-operation not just among firms but between firms and non-firm organisations like universities and trade associations are important for 'boosting innovation, quality assurance and vocational training'. They add that SMEs cannot solely rely on their own informal tacit knowledge base for innovation purposes but require supplements in the form of public goods.

No matter what the immediate purpose of co-operation (or indeed the mode), whether to achieve cost savings, gain (external) economies of scale in production, access new knowledge for learning and innovation or obtain a greater degree of control over suppliers, the underlying driver in external co-operative relationship formation is the need to achieve some kind of competitive advantage.

For Porter (1998b, pp 49-50) 'a history of sustained and cumulative investment' in (customer) relationships creates an intangible asset which is a higher-order advantage in the 'hierarchy of sources of competitive advantage in terms of sustainability'. Langlois & Robertson (1995, p11) similarly attribute a firm's success in generating 'the highest possible returns' to the acquisition of and accurate use of 'information or knowledge about producers and production processes' that can be extracted externally i.e. from other firms. A firm's relationships are among the sources of its competitiveness according to the resource based theory of the firm 'a firm's competitive position is defined by a bundle of unique resources and relationships' (Das & Teng, 2000 referring to Rumelt, 1984 p557). Even the survival of an

individual firm 'is very much connected to the relationships it has forged with other firms' (Jacobson *et al*, 2001) Wilkinson & Young (2002) elaborate

Firms do not survive and prosper solely through their own individual efforts, as each firm's performance depends in important ways on the activities and performance of others and hence on the nature and quality of direct and indirect relations a firm develops with these counterparts. Inter-firm relations involve a mix of co-operative and competitive elements (Wilkinson and Young, 2002)

If inter-firm relations enhance a firm's performance, why is it that some firms engage in more co-operative forms of interaction than others?

#### **2.4.2 Types of Co-operation**

At this point it may be useful to reflect briefly on what is meant by co-operation – an important source of Marshallian external economies (Harrison, 1994). Co-operation can include "weak ties" between firms in a local economy through which information is shared i.e. through gossip and informal "chit-chat" between company owners, managers or employees (Lorenzen, 2001/02). This type of co-operation can become institutionalised and form part of 'the rules of the game' by which firms operate.

Still at an informal level, co-operation can emerge as a by-product of economic interaction or as Gertler (1995) calls it, an 'organised market transaction' in which there is extensive interaction and communication between the buyer and supplier. The example given by Gertler (1995) is the interaction between a producer of machinery and the prospective machinery user firm. A feedback mechanism between the two firms provides the producer with information enabling him to improve the machinery and the user with means of obtaining assistance in the use of the machinery, a process of learning (by using) and innovation (through interaction) is thus apparent.

At a more formal level but still including economic interaction between actors – both horizontal and vertical – there is structured co-operation between for example firms in

the same industrial sector (horizontal co-operation) that form a joint venture for the purpose of accessing new markets or achieving economies of scale. Another example would be firms in a supply chain (vertical co-operation) that form a partnership approach with the aim of increasing efficiency, improving processes and co-developing products or components of products.

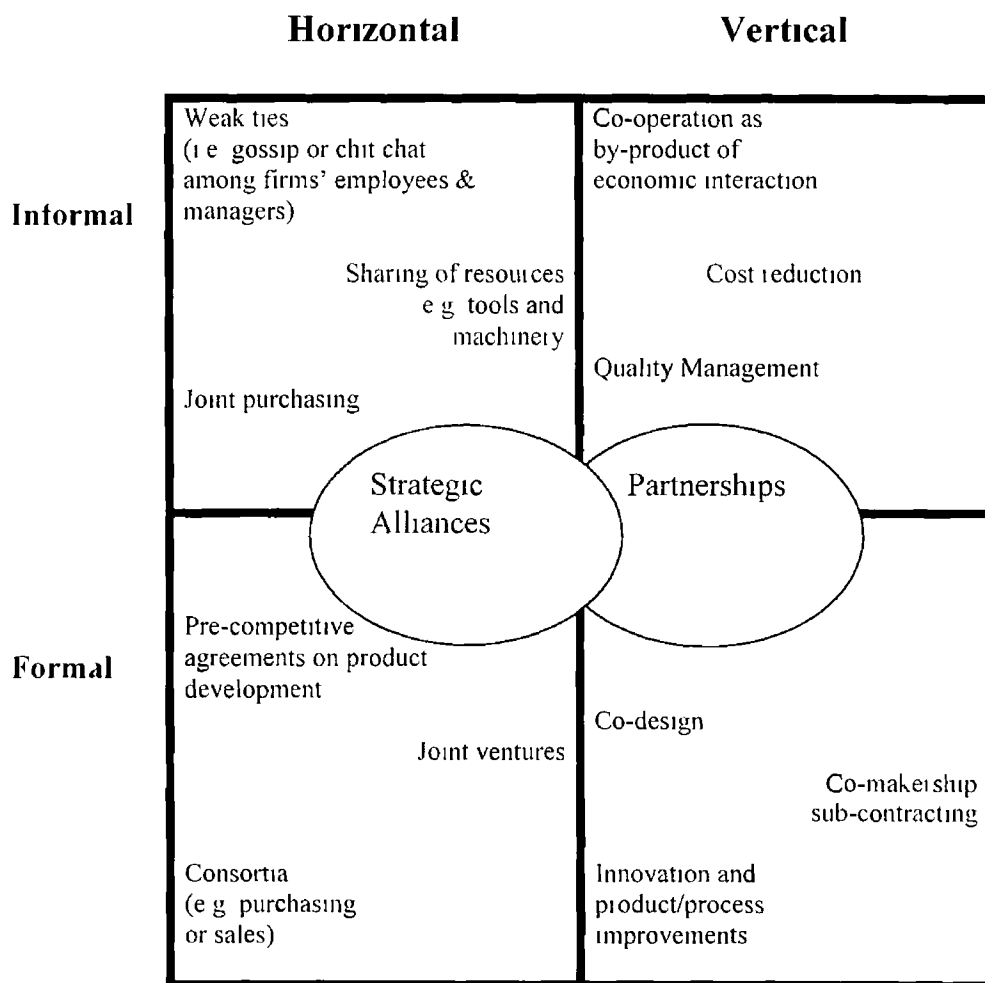
Within structured forms of co-operation there must be commitment by both parties. Commitment can mean allocation of resources (financial, human, temporal) that result in operational integration and technological integration (Carbonara, 2002). This has implications for firms' boundaries and the use of terms like quasi-vertical integration or quasi-horizontal integration may be applied to certain co-operative forms (Langlois & Robertson, 1995, pp 137-138).

Lying somewhere between "soft" (i.e. weak ties that are largely informal) and "hard" (i.e. strong ties that emanate from economic interaction) forms of co-operation, that are horizontal in nature, are the links between firms and non-firm organisations such as 'producer cooperatives [that] arrange with small manufacturers to provide centralised exhibitions and organise participation in international fairs' (Langlois & Robertson, 1995: 138). Other examples are organisations that provide professional training, quality certification, financial planning and/or consultancy services for new product and process development (Carbonara, 2002). The result is a form of quasi-horizontal integration (Langlois & Robertson, 1995, p 138).

From this, it may be possible to introduce a typology of co-operative forms (See Figure 2.1). This is not intended to be exhaustive in scope but rather illustrative of co-operation types according to the type of linkage (i.e. horizontal or vertical) and formal or informal. We see that strategic alliances and partnerships can be found in both formal and informal co-operation types and among vertically and horizontally associated actors. Depending on the levels of trust alliances and partnerships may be co-ordinated by contract (formally) or by trust (informally) that has been built up over time through relational exchange or by the "rules of the game" (i.e. socially regulated). Joint purchasing, for example, that appears in the top left quadrant is a type of strategic alliance. Depending on how well the parties involved know and trust one another this may be either formally or informally co-ordinated co-operation.

Similarly a partnership between a supplier and buyer (horizontal) may be co-ordinated on the basis of trust derived from repeated economic exchanges (informally) or by contract (formally). For this reason partnership straddles both the informal and formal quadrants. The figure also shows that both strategic alliances and partnerships can be found among horizontally and vertically linked actors and therefore they are displayed at the centre of the four quadrants. (For further discussion of the transition from organic to more co-ordinated forms of co-operation see Chapter 7.)

**Figure 2.1** Informal and Formal Co-operation According to Linkage Type



### 2.4.3 Facilitating Co-operation – The Role of Trust

Underpinning the degree to which actors (firms or non-firms) co-operate with one another is trust. Trust may be socially and institutionally embedded in a particular

place According to Granovetter (1985) this embeddedness is the result of 'the relationship between daily economic relations and the deeper context of social and political institutions, norms and tacit rules that reproduce community' (Harrison, 1994) In this sense, trust may either be *ascribed* or *socially regulated* (Heanue & Jacobson, 2001/02) Ascribed trust refers to trust based upon a characteristic shared by interacting organisations (firms or non-firms) (Heanue & Jacobson, 2001/02) Through a process of ascription actors expect a certain type of behaviour from those they interact with simply by virtue of them belonging to a particular social group (e.g. family) (Lorenzen, 2001/02) When trust is socially regulated there are codes or norms of behaviour that are shared by firms in some kind of association, a contravention of these codes or norms results in expulsion or other action that damages the firm's prospects in some way (Heanue & Jacobson, 2001/02)

Trust may, however, be created through repeated relational exchanges in long term relationships (Panizzia, 1998) that result in 'relational, economically motivated structures of trust' (Langlois & Robertson, 1995 p129) We show that this is the case in the relationship between a buyer and a supplier in the fish processing sector (Chapter 7) In Lazerson and Lorenzoni's (1999) opinion, trust and co-operation are, to a large extent, the outcome of 'reciprocal relations' developed over time rather than 'a resource buried in the [industrial] district's substratum readily accessible to all of its denizens'

Lorenz (1999), in his study of long-term subcontracting relations amongst firms in the machine-building industry of Lyon, found that moral contracts supplemented only by a written order form and not a detailed written contract provided 'a set of implicit *procedural rules*' that contributed to the build-up of trust between partners He stresses that 'if mistrust is too deeply embedded, owing to a legacy of conflictual relations, the actors may be unwilling to bear the inevitable risk involved in entering into long term contractual relations' even if the prospects of mutual gain are great Through a step-by-step process Lorenz (1999) suggests that 'agents start with small risks and increase their commitment of resources depending on the quality of their interaction'

Harrison (1994) notes the way in which firms express trust 'trust is built up over a period of time, through continual contracting and re-contracting, through informal deal-making, through one firm or group's offering assistance to another in moments of stress, through mutual reinforcement in responding to contingency' What this implies is that firms can learn to trust in the absence of place specific, culturally embedded social trust

The shared views and values that bind a 'community of people'<sup>3</sup> together and generate collective action and vision are what underscore much of the traditional writings on industrial districts. Industrial district-type effects may however be obtained from somewhat less socially embedded networks. Through shared workplace practices or training regimes for example firms enjoy organisational proximity (without necessarily having spatial proximity) and through this shared organisational 'culture', co-operation is facilitated (Gertler, 1995). Depending on the particulars of the inter-firm relationship and the associated co-operation, "closeness", in the physical, organisational and/or cultural sense, may be required (Gertler, 1995). Gertler (1995) cites the example of users and producers of advanced manufacturing technologies in Ontario, Canada as actors requiring the presence of all three, in order to successfully implement new technology.

In the absence of spatial proximity, Heanue & Jacobson (2001/2002) found that organisational proximity comprising three dimensions – relational, interpersonal and institutional – could facilitate co-operation among three furniture firms in Ireland. The firms compete with one another on the Irish market but through a joint venture have co-operatively developed new products aimed at the UK market.

What these two examples serve to highlight is that different factors are at play in different situations. In the Canadian example a great deal of face to face interaction was required, as well as visits to users' production facilities for inspection of technology in use. In the Irish example, however, design and manufacture of new products could take place without intensive "on site" interaction. Factors that may determine the degree of interaction between actors and the need for proximity

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<sup>3</sup> The term 'Community of People' was first used by Beccattini, (1990) to characterise the socio-territorial entity that is the industrial district.

(organisational and or physical) are the type of relationship (horizontal or vertical) and the type of product being produced. Where there are 'frequent, unpredictable and constantly shifting face to face encounters' it is likely that linkages will be created locally (Scott, 2001). However, in contrast to this Scott (2001) outlines a situation where geographic range may be extended i.e. in circumstances where distribution of a final product incurs low costs per unit of distance. Both the stage of production in the manufacturing process to which an individual firm belongs, and the relative logistics costs may therefore be important in determining whether localised linkages develop. Van Egeraart and Jacobson (2005) in their examination of the geography of production linkages in the Irish and Scottish microcomputer industry, show how relatively unimportant spatial proximity between computer assemblers and component manufacturers is. Driving the creation of external linkages (i.e. outside of the region and country) in this case were price advantages offered by suppliers in distant low-wage regions. (In this case, though, trust is relatively unimportant.)

The traditional building blocks of trust and co-operation in the industrial districts (i.e. sense of community, shared values and institutionalised norms of economic behaviour) can in some cases contribute to the weakening of the local economy. Lazerson and Lorenzoni (1999) suggest that it is 'far more common [to encounter] situations in which community membership does not generate trust or economic co-operation'. They recall Wilkinson's (1993, p. 10) examination of the hosiery industrial district of Leicester where 'rampant individualism, cut throat competition and deteriorating wages and working conditions' rendered firms incapable of 'effective co-operation at almost any level and for any purpose' (Lazerson and Lorenzoni, 1999). We show in Chapter 9 – the bakery industry case study – that shared values of secrecy and rivalry shape the rules of play and have prevented co-located firms from co-operating with one another.

Trust and co-operation cannot however, prevent the decline of an industry. Camuffo (2003) describes how the eyewear (glasses frames) industrial district of Belluno, Italy, was successful, but only at flexible specialisation production<sup>4</sup>. When faced with a new

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<sup>4</sup> This type of system is one in which there is a high level of interdependence. No one firm can produce the entire product. Each firm is highly specialized, but altogether the firms of the ID produce high-quality products, in high quantities but multiple designs, at low costs.

competitive environment in which design, fashion and marketing became more important, the small-firm district experienced a 'quasi demise' Survival of the industry can be attributed to the emergence of large, vertically integrated leading firms, some of which were MNEs and in particular, their strategies in the areas of technological innovation and quality (Camuffo, 2003)

Trust, whether it is ascribed, socially regulated or the product of repeated transactions may not explain why firms co-operate. It may not be the driver, but its existence or growth between two firms interacting through market transactions may, over time, lead them to develop a more co-operative relationship. Trust facilitates rather than motivates co-operation. The absence of trust, say in a formal co-operative situation such as a joint venture, can inhibit the sharing of tangible and intangible resources thus preventing the creation of value (Carrall and Inkpen, 2000)

#### **2.4.4 Co-operation versus Non Co-operation – The Factors at Play**

Given that great weight is attached to co-operation in the cluster and related literatures and that trust is the basis upon which successful co-operation is built, it is essential that we explore further the factors at play in the development of co-operative and collaborative processes. How certain factors inhibit the transition from traditional market transaction to more co-operative interactions is of vital importance to understanding why clusters of industry have failed to develop. This is particularly pertinent given the context of the study herein where only elements of localised clustering are uncovered (See Chapters 7 and 9)

It has been suggested that the degree to which firms co-operate with one another may be largely dependent upon the industry or sector to which they belong and that these inter-industry differences may help to explain the variations in inter-organisational relationships across industries (Ebers and Jarillo, 1997/1998). Industry factors are those which define it and distinguish an industry from other industries. They include intensity of competition, the degree of uncertainty, power structures, minimum scale of production (Ebers and Jarillo, 1997/8) and technological characteristics such as the technical specifications inherent in a production process (Corolleur and Courlet, 2003)



Consideration must also be given to an industry's ecosystem, the defining characteristics of which are a life cycle that guides evolution within the system and the rate of technological change that has the ability to completely re-configure the system. Both of these factors have implications for how firms organise themselves and the strategies (which may include co-operation with external actors) they employ to attain or maintain a competitive advantage (Lei and Slocum, 2005). The stage of cycle and degree of technological change in an industry can shape the way in which firms interact.

#### **2.4.5 *The Nature of Competition***

How firms compete can have implications for how firms interact with one another. Price competition can jeopardise co-operation as it is 'likely to have destructive consequences on the delicate balance between competition and co-operation that underlies the functioning of the district model' (Dei Ottati, 1994). 'Price competition introduces conflicts and tensions that can constitute a serious obstacle for the maintenance of co-operation among individuals and firms in the district and, therefore, also for the co-ordination of the various activities within' (Dei Ottati, 1994). Excessive price competition, she continues, obstructs innovation. 'This is due to both the reduction of financial resources required to carry out new investments (profits are reduced) and decreased willingness to collaborate on the part of the workers within the firms (wage reductions) and above all on the part of the other local specialised firms involved in complementary activities' (Dei Ottati, 1994).

Dei Ottati (1994) distinguishes between constructive and destructive competition. In the former, efficiency is promoted and innovation initiated within an environment in which all observe 'normal rules of fair business'. In the latter, competitive behaviour is such that monopoly power is obtained by employing 'predatory practices', the aim of which is to destroy those with less market power. Similarly co-operation can be both constructive and destructive. In the former, co-operation can manifest itself in the form of a group of small firms that enables them to compete on the same market as larger, more powerful firms (Dei Ottati, 1994). However, where co-operation is

destructive it may take the form of protectionist cartels that smother competition (Dei Ottati, 1994)

#### 2.4.6 *Uncertainty*

The move towards co-operative links (either vertical or horizontal) may be triggered by the rate and type of change particular to an industry and the degree of uncertainty that such change carries. Change, whether parametric, strategic or structural, has implications for organisational structures (Langlois & Robertson, 1995 pp 135-136). In industrial districts, in general, co-operation between firms facilitates the reduction of strategic uncertainty (Corolleur and Courlet, 2003). Structural change may call for product diversification and quality upgrading due to new conditions in national and international markets. In the industrial district of Prato in Italy such conditions have increased the need for co-operation and indeed co-ordination of activities to a greater extent than they had in the past, 'when quality requisites were less cogent, and the range of products less varied' (Dei Ottati, 1996). The implication for organisational structure, in this case, was a move from organic to more co-ordinated interaction i.e. the formation of *gruppi* (groups of firms)<sup>5</sup>. In other cases, such as that of the eyewear industry in Belluno, northern Italy, new conditions in international markets resulted in a breakdown of the small firm industrial district and the emergence of vertically integrated MNEs (Camuffo, 2003).

Vertical integration, whether co-ordination integration<sup>6</sup> or ownership integration, is dependent, among other things, on the degree and type of uncertainty. For example, through sub-contracting relations a firm can benefit from its suppliers' investment in certain technologies, processes, etc., and avoid the ownership integration that would mean carrying the risk internally (Andreosso & Jacobson, 2005 p 273). This, however, requires either that the supplier firm have no choice but to carry the risk of such investment (because of, for example, the buyer firm's monopsony power), or that the buyer firm make some other trust or contractually based contribution to the risk borne by the supplier.

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<sup>5</sup> *Gruppi* are 'a stable collection of firms bound together by economic and social ties such as subcontracting relations and kinship ties among entrepreneurs' (Dei Ottati, 1996)

<sup>6</sup> Co-ordination integration is the term used by Langlois & Robertson to describe integration other than ownership. It refers to various co-operative exchanges between autonomous economic actors.

In the case referred to by Andreosso & Jacobson (2005), multinational software companies had monopsony power over Irish software manual suppliers and were therefore able to shift the technology and product uncertainties to the suppliers. In the Belluno eyewear case, uncertainties arising from globalisation – both in production and marketing – had a different effect, leading to vertical, ownership integration. Among the reasons for this difference was the need for the producers to have more control over final distribution so as to gain information about consumer behaviour at the end of the supply chain. In the Irish software case the buyer firms already had most of the necessary information, ownership integration would have been unnecessary backward integration. In the Italian eyewear case they needed more certain access to information, the ownership integration was necessary forward integration.

#### **2.4.7 Industry Life Cycle**

The degree of uncertainty and change in an industry or sector is linked to the life cycle of that industry. According to Langlois & Robertson (1995, p.136) ‘the appropriateness of organizational structures varies over the product life cycle’. To understand organisational and inter-organisational behaviour (which includes co-operative activity inherent in clustering processes) consideration should be given to the stage of industry life cycle that firms operate within.

‘Empirical research has shown that the evolutionary trajectories of diverse organisational populations across industries appear to follow a prototypical path from birth to maturity’ (Agarwal & Echambadi, 2002). The number of organisations grows slowly at first and then increases rapidly. Lei & Slocum (2005) have devised a framework for such analysis and have developed a typology of four industry environments: Fast Growth, Wild, Wild West, Steady Evolution, and Creative Destruction. Within each of these environments there are different strategic courses of action that firms can take. They may become concept drivers, pioneers, consolidators and concept learners.

In stages three and four, Steady Evolution and Creative Destruction,<sup>7</sup> firms are forced to seek alternative strategies that are external to the firm. In Steady Evolution, competing firms 'often exhibit a market tendency to utilize standardized technologies, platforms and operating systems. Consequently, the pursuit of substantial economies of scale – large size, integrated supply chains and continuous improvements in process technologies – drives firms in this environment' (Lei & Slocum, 2005). To gain a competitive advantage in such an environment firms may become consolidators. Consolidation in this context can refer to ownership integration but it may also refer to co-ordination integration. The latter can manifest itself in close connections with core suppliers so that the risks of future production development and new market entry can be shared (Lei & Slocum, 2005).

In short, the stage of industry life cycle may play a role in motivating firms to cooperate. However, as highlighted in section 2.3.3 trust amongst agents is a prerequisite for the development of closer, more co-operative ties.

## **2.5 The Importance of Local and Regional Clusters**

Having defined industrial clusters, their dynamics, the stages of development and types of firms they are most likely to contain, we turn our attention to the reasons why one might be concerned with clusters and in particular clusters at the local and regional scale rather than other territorial levels. We begin with a discussion of the localisation versus globalisation debate.

### **2.5.1 Localisation and Globalisation**

Given the fact that 'globalisation in many industries has led to companies being configured on an international scale' (Raines *et al.*, 2001) one might reasonably assume that the focus should shift from the local to the global scale and that a study of industrial structure in the local context is somewhat futile. This is not, however, representative of the views expressed in a growing body of literature on these two seemingly opposite forces. Before we proceed to discussion of these views we need

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<sup>6</sup>We refer to these in particular, as they are the stages most applicable to the sectors that are the focus of our case studies presented in Chapters 7,8 and 9.

to define localisation and indeed globalisation so that a clearer debate can be developed on the topic. Simply defined, localisation occurs when ‘a firm or group of firms concentrates their activities in a particular place’ (Jacobson & Andreosso-O’Callaghan, 1996)

As we explained above, Marshall described three reasons or causes of localisation – physical conditions, local market conditions and the particular political, cultural and social factors attaching to a location – which, for industry, provide ‘cumulative advantages to its continued location in that place’ (Jacobson *et al*, 2002). In addition to Marshall’s advantages of localisation discussed above, recent analysis suggests that transaction costs can be reduced as well as the costs of negotiating and monitoring contracts (Enright & Roberts, 2001). Globalisation on the other hand is assumed to ‘transcend nation, state and region’ (Gordon & Kimball, 1998). Jacobson & Andreosso-O’Callaghan (1996 p114) define it in simple terms as ‘the process whereby the countries, regions and localities of the world are homogenised by changing economic, social, political and technological forces’. However, they agree with Dicken (1992) when he suggests that the forces of globalisation are not as clear cut as this and that ‘change does not occur everywhere in the same way and at the same rate, the processes of globalisation are not geographically uniform’. This leads us to conclude that, although seemingly opposite forces, localisation and globalisation, do in reality, co-exist (Jacobson & Mottiar, 1999)

Emphasising this point, Garibaldo & Jacobson (2005) argue that as a consequence of globalisation ‘a reinvention and re-functionalisation of the uniqueness of some places’ takes place. Referring to the work of Sassen (2001), Garibaldo & Jacobson (2005) highlight that ‘in the new global organisational structure centrality<sup>8</sup> still matters’ and ‘the destructuring and reinvention of organisational structures due to globalisation does not imply the disappearance of regional spaces but a redefinition of them’. In short, this is described in terms of layers of networks – global ‘trans-territorial’ networks that are linked to ‘continental’ networks, which in turn are linked to regional networks (Garibaldo & Jacobson, 2005)

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<sup>8</sup> Centrality refers to the place in which (i.e. region or country) firms maintain their central headquarters

Cabus (2001) further suggests that ‘the more something functions on the global scale, the more it seems to need a set of conditions which, by their nature, are local, immobile and specific’ We would therefore be mistaken in thinking that globalisation is simply the spreading out of economic activity, it is on the contrary and in reality accompanied by ‘agglomerative tendencies in many parts of the world’ (Scott & Storper, 2002) Amin (1998) goes so far as to say that we should develop a ‘relational understanding [which] centres around the claim that globalisation represents the intensification of linkage and inter-dependence between different scales of activity’

Drawing on the work of Richard Gordon, Amin (1998) suggests that in attempting to develop an industrial district or some other form of dynamic cluster one needs to be aware of the particular local-global connections that exist within that territory In other words, one needs to be aware that large MNEs with transnational connections and innovation and production networks also have a huge influence on the competitiveness of local economies Amin further suggests that globalisation neither makes space indistinct nor encompasses it as a component element for exploitation, it does however enhance ‘the specificity of regional innovative milieux and mobilises their particular attributes within the global innovation processes’

This brings to the forefront the notion that local and global tendencies do not simply co-exist, they in fact interact with – and even change – one another This point is underlined in the work on the software sector in Ireland of O’Gorman et al (1997) Here, it is recognised that just as local interaction and geographic proximity are important for some industries, transnational linkages too can be an integral part of firm and industry competitiveness in others Given the fact that Ireland has such a high rate of foreign direct investment it is essential to be aware of connections beyond the territory which is the focus of the study This is especially pertinent in the case of North Dublin where in 2001 foreign owned firms accounted for 36 per cent of the total number of firms and where employment in those firms accounted for 63 per cent of total employment in the area<sup>9</sup> There is a need to understand how these companies affect the local economy and not just how the local economy affects their performance

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<sup>9</sup> Based on analysis of unpublished Forfas employment data

A discussion of territorial clustering cannot be confined within the parameters of the localisation versus globalisation debate, although as we have seen (above) this is a significant starting point in terms of fleshing out the reasons for favouring one scale over another. What has been established is that 'local' still warrants investigation but within the broader context of local-global interaction. The recent interest in local and regional clustering seems to stem from new agendas in regional policy formulation and the desire to achieve local economic development. This, along with the notion of flexible specialisation and the 're-emergence of regional 'marshallian' economies' (Cabus, 2001) has brought the cluster concept to the forefront of economic thinking on regions.

### **2.5.2 Theory of Agglomeration**

Theoretical underpinnings of clustering have a deep rooted history – a review of which reinforces the appropriateness of local and regional industry analysis and is therefore worthy of inclusion here. Theories of clustering, whether of Porterian clusters, industrial districts or regional systems of innovation, all tend to associate the reasons for or causes of the emergence of clusters with externality effects and agglomeration economies (Bresnahan *et al.*, 2001). Fujita & Thisse (2002), for example, argue that both increasing returns to scale and externalities cause economic agglomerations. The spatial configuration of industry, they say, is the 'outcome of a process involving two opposing forces, that is agglomeration (or centripetal) forces and dispersion (or centrifugal) forces' with the result being a 'complicated balance of forces that push and pull consumers and firms'. It is not clear whether there is ever any balance or equilibrium, continuing imbalance may be an underlying cause of change. Either way, the reality as observed empirically is that industry is more clustered than dispersed. This introduces the notion of 'lumpiness' in the spatial dispersion of industrial activity which Jacobson & McDonough (1999) suggest is 'consistent both with the theories of international trade and the theories of industrial development'.

The causes of clustering operate in different ways, at different levels, in different industries. Chapman & Walker (1991: 58), for example, show that concentrations of

economic activity can be seen at various geographical scales, citing examples of distinctive quarters of productive activity at the urban scale and massive agglomerations of industries such as oil refining at the regional or national scale. As suggested by Marshall (1898) in his distinction between causes and advantages of localisation, the reasons why clusters emerge are different to those which will ensure their sustainability (Bresnahan *et al*, 2001)

It is worth noting at this point the difference between what is meant by urban agglomeration and industrial agglomeration. The former refers to the creation of cities where there are a number of diverse industries and the latter refers to a place in which there are a large number of production facilities or establishments centred around one industry (Jacobson *et al*, 2001). This may be described as the difference between multi-industrial and mono-industrial specialisation.

### 2.5.3 *Increasing Returns to Scale*

'Increasing returns to scale at the level of the plant provides an incentive for producers to concentrate their activity' (Mottiar & Jacobson, 2002). According to Fujita and Thisse (2002: 7) if we are to explain economic agglomerations while at the same time ignoring the attributes of physical geography, increasing returns in production activities are required. This is central to Krugman's thinking on firm location. Increasing returns to scale, however, in this sense refer simply to output of a single large firm. Mottiar & Jacobson (2002) feel that by using Marshall's distinction between internal and external economies of scale, Krugman's argument can be extended to groups of firms.

In their critique of Krugman's work, Jacobson & Andreosso-O'Callaghan (1996: 113) acknowledge that increasing returns to scale may indeed be significant 'but in the context of localisation (or spatial concentration), it must be considered in conjunction with external economies'. Increasing returns to scale are thought to be internal whereas external economies of scale are 'explicitly spatial' and are the basic cause of agglomeration according to Marshall (Fritz *et al*, 1998). While (internal) economies of scale – or increasing returns to scale – are part of the explanation as to why firms grow, external economies of agglomeration are part of the explanation as to why firms



cluster. Increasing returns to scale at the level of the firm do not imply anything spatial other than the emergence of a large local concentration of factor employment where a single large firm exists in space (Gordon & McCann, 2000). The trade off between increasing returns in production and transportation costs is central to the understanding of the geography of economic activities (Dicken & Lloyd 1990: 207, van Egeraat and Jacobson, 2005)

#### **2.5.4 Externalities - A Short Historical Account**

Bergman and Feser (1999) suggest that in order to understand the benefits of spatial concentration we should return to traditional industrial location theory – the theories of Hoover and Weber but also including Marshallian theory – as these underpin much of the recent conceptual and theoretical thinking on clusters. For example Porter's theory of competitive advantage is heavily influenced by the work of Marshall although Porter does not acknowledge this (Bergman & Feser, 1999: 11, Feser, 1998). For example, in his *Competitive Advantage of Nations* Porter argues that the success of industrial clusters in a global economy is attributable to the strength of presence of localisation economies (Fujita & Thisse, 2002: 268).

##### **i) Hoover and Weber**

It was Alfred Weber who first suggested that firms could benefit from a particular kind of external economy called economies of agglomeration (Dicken & Lloyd, 1990: 208). Weber also drew the distinction between regional location factors and agglomeration factors. The former is concerned with the availability of factors of production and costs of transportation which in turn influence the broad patterns of industrial location while the latter refers to the general scale of operations within a particular area (Chapman & Walker, 1991: 59). Rather than increasing their own scale of production, firms can derive benefits through their 'spatial association and functional linkage with the larger agglomeration' (Dicken & Lloyd, 1991: 208). It is widely acknowledged however that Weber failed to investigate fully the nature of agglomeration economies, instead he simply documented their existence and did not concern himself with why they arose (Bergman & Feser, 1999, L'Harmet, 1998: 136).

Hoover (1937, in Chapman & Walker, 1991), in continuing the work of Weber, made an important distinction between two types of agglomeration economy: urbanisation

economies and localisation economies, the former being externalities associated with general urban advantages and the latter being the externalities related to proximity among business enterprises (These externalities arise from what we referred to above as multi-industrial and mono-industrial specialisation ) It is the localisation economies that are the focus of the cluster literature (Bergman & Feser, 1999)

It is important to note that a spatial concentration of firms does not automatically imply the existence of economies of agglomeration Jacobson *et al* (2002) cite the example of a government incentive to encourage the co-location of firms in a particular place Unless the co-location of firms results in some additional benefit other than receiving the government incentive, then 'such spatial grouping constitutes a concentration but not an agglomeration' The same can be said for clusters where the emphasis is on synergistic effects caused by spatial concentration of industry

#### ii) Marshall and localisation economies

Localisation economies, which for Marshall represent an example of external economies, form the basis for thinking that geographical clustering of firms is advantageous (Dubin & Helper, 1998 111) Given the focus and nature of the study undertaken here they are especially pertinent In fact it is Marshall who draws our attention to the territorial organisation of industrial activities by introducing the notion of industrial districts and devoting a chapter to 'The concentration of specialised industries in particular localities' (Marshall, 1920 in Quere & Ravix, 1998 87)

We have already outlined Marshall's distinction between the causes of localisation and the advantages of localisation These factors can be applied in the modern day context and have contributed to the explanation for the growth and success of industrial districts (Fujita & Thisse, 2002 268) Here we describe these factors in a little more detail An agglomeration of industry in a particular place arises, according to Marshall, because of physical conditions, demand conditions and political or cultural influences (Jacobson *et al*, 2002 2,819) The benefits associated with such cluster formations are 'hereditary skill, the growth of subsidiary trades and the emergence of a local market for the special skills required by the industry' (Jacobson & Andreosso-O'Callaghan, 1996 110) The physical conditions are essentially the place specific conditions which facilitate the production of a particular good, for

example close proximity to raw materials Demand conditions refer to the local market within which the firm is located

Decision to locate in a given place may be dependent upon where the firm can sell its outputs – proximity to the market, depending on various other factors, can be key The political, social and cultural context within which industry operates can also have an important influence on the development of clusters Local development is influenced, for example, by policy at a number of different scales, as national systems comprise local and regional systems (Vesti, 2002) At the national level, the general business environment, including corporate tax rates, the legal system and the transport and other infrastructural systems, cuts across all industries and is not sectorally specific However particular sectors may be subject to rules and regulations The financial services sector is governed by a strict set of rules and underpinned by a wealth of legislation The extent to which a cluster may grow in this particular sector depends upon the legislative framework which may even be imposed differently at different territorial levels within the same nation state Ireland provides an obvious example of such with the International Financial Services Centre ring-fenced within the north docklands of Dublin

While politics sets the rules and governing structures the climate for trust and co-operation is driven by the social customs present in a locality/territory (Bellandi, 1996, Sabel, 1992, Lorenzen, 2002) In territories where trust is ‘second nature’ Sabel (1992) believes that clusters will reap the benefits of ‘their loyal dispositions in a world in which loyalty increasingly pays’ Self-interest, he writes, will result in firms and clusters being ‘short changed’ Within industrial districts trust is central to the ability of district members to co-operate and act collectively (Markusen, 1996) An industrial agglomeration arises therefore by some mix of the natural, market and social/political/cultural factors described above Once established in a particular location more external and largely dynamic economies are progressively created forming a cumulative process (Isaksen & Hauge, 2001, Jacobson *et al*, 2002)

The advantages of localisation or territorial (local) concentration and (sectoral) specialisation relate first to the level of skill that becomes embedded over time in a particular place This skill is essentially internalised within the district or place

(Markusen, 1996) This occurs through the creation of a specialised local labour market. A pooled labour market which is in itself both a cause of agglomeration and an advantage (Jacobson *et al*, 2002) enables cost savings to occur (Isaksen & Hauge, 2001). The skills developed within this local labour pool become so commonplace that they can be reproduced easily (Sforzi, 2002, Isaksen & Hauge, 2001). Through social interaction knowledge too can be circulated easily and diffused rapidly throughout the local economy resulting in knowledge spillovers. Production of new ideas is based both on 'the accumulation of human capital and face-to-face communications' as well as the existence of modern infrastructure (Fujita & Thisse, 2002). In other words the creation of non-market, relational assets 'foster[s] an untraded circulation of information and knowledge' (Isaksen & Hauge, 2001).

Second, localisation gives rise also to the development of subsidiary activities in both manufacturing and services resulting in emerging sets of specialised suppliers and services firms. In other words the growth in the number of firms involved in the agglomerated industry means that there is an increased demand for the local production of manufactured and service inputs (Jacobson *et al*, 2002). These externalities can be divided into two distinctive types 'hard' and 'soft'. The hard externalities, Rosenfeld (2002) writes, are those which produce 'a larger pool, greater variety, and lower costs of supplies and components, specialised and customised services, skilled labour, and potential partners'. The soft externalities refer to tacit knowledge accessed and relational assets created.

Marshall's description of the advantages of geographical clustering provides the first indication that some kind of system of innovation is created through the close proximity of a number of related firms. Localised learning is the term that Malmberg and Maskell (1997) use to describe the process whereby firms engaged in interactive learning are driven into a spatial agglomeration by virtue of the benefits of 'assembled resources' available in close proximity.

### **2.5.5 Agglomeration Economies and Linkages**

'An important basis of agglomeration economies [is] the connections or linkages between economic activities within a relatively restricted geographic area. Any firm

is but one part of a complex chain of production – a series of transactions – held together by direct or indirect linkages’ (Dicken & Lloyd, 1990: 211). Linkages and dynamic interaction are fundamental to the cluster concept (See Section 2.4). They may however differ in terms of operationalisation depending upon the particular perspective from which they are approached. In general though Dicken & Lloyd (1990) suggest that they take the form of one of the following: production linkage, services linkage or marketing linkages. Contrary to the notion that geographic proximity is required in order to develop and maintain economic linkages, Chapman & Walker (1991: 62) make a distinction between industrial linkage and agglomeration. While acknowledging that linkages within and between firms can encourage geographical clustering of inter-dependent firms (i.e. agglomeration), they suggest that more often than not considerable distances separate the activities of such inter-dependent firms. Indeed, particularly in relation to the linkages of MNE computer manufacturers in Ireland, van Egeraat and Jacobson (2005) show that their key suppliers are almost all located in other countries.

Thus linkages may not be confined neatly within a specific geographical location, but may be spread across territorial boundaries. However, the cluster literature does tend to suggest localisation of such relationships. Whether linkages are predominantly regional, national or even international rather than local is a matter for empirical investigation and may vary from industry to industry and from place to place.

## 2.7 Barriers to Cluster Formation

As indicated in section 2.4.1, not all regions are endowed with the conditions or factors necessary to create and sustain dynamic clusters. This may be attributable to historical circumstances according to Rosenfeld (2002). Just as the birth of a cluster can be traced to particular historical events at local, regional or national level so too can the failure of clusters to emerge be linked to past inadequacies in terms of investment or policy formulation and implementation for example. We show in the bakery industry case study (Chapter 9) that a history and tradition of inter-firm rivalry and secrecy has prevented a spatially concentrated group of firms from developing co-operative links with one another. This has in turn created a significant barrier to the industry’s evolution from spatial concentration to cluster.

Rosenfeld (2002) points out that infrastructural deficits, inability to access capital, technology and innovation, regional isolation, poor levels of education and absence of a skilled workforce all act as barriers to the creation of clusters. Areas characterised by underprivileged and undereducated populations suffer from economic exclusion because of 'weak links to benchmark regions and markets'. Rosenfeld's analysis of the effects of barriers suggests that there are situations where clusters simply cannot emerge and grow.

In addition, a region or locality may be able to develop industrial agglomerations but only to a certain extent, that is, until growth is deterred by diseconomies of agglomeration. These localised external diseconomies of scale culminate in social and economic costs due to increased agglomeration. Both congestion and pollution have been highlighted as examples of such negative externalities (Jacobson *et al*, 2002).

Given that at the outset of study there was no guarantee of uncovering clusters or even elements thereof within the local economy of North Dublin it was essential that our empirical investigations would be conscious of both the forces driving the creation of dynamic localised clusters and those which have the opposite effect. For this reason we elaborate further on Rosenfeld's description of the barriers to cluster formation at a regional level so as to understand the opposing forces.

#### i) Infrastructural Deficits

Deficits in infrastructure can result in regional disparities in terms of development and in turn inhibit capital investment. In locations where it is costly to transport goods and people some regions can quickly become obsolete (Rosenfeld, 2002). Time to destination and logistics are becoming increasingly important to both businesses and customers alike and where poor infrastructure hinders the speed with which goods are transported from place to place then cluster development is unlikely to take any real hold.

#### ii) Inability to Access Capital

Cluster development within a region also depends upon the entrepreneurial and innovative abilities of local companies and employees (Rosenfeld, 2002) This 'competent entrepreneurship' as Sengenberger & Pyke (1992) call it, is integral to the dynamism of industrial districts in the Third Italy However in order for this entrepreneurial energy to be transformed into marketable goods and services capital is required The need for local sources of capital where local business needs are understood and accounted for is essential if localised clusters are to emerge and grow (Rosenfeld, 1997)

#### iii) Institutional structure

The development of clusters is dependent upon the 'institutional thickness' present in a particular region (Amin & Thrift, 1994) Firms within clusters rely on regional agencies or organisations for things that cannot be generated internally or obtained from other companies (Rosenfeld, 2002) Thickness suggests not only the presence of institutions (organisations), it refers also to the synergies created through 'interaction, collective representation and common purpose' (Keeble *et al*, 1999) Without an 'integrated web of supportive organisations and institutions' which include 'firms, financial institutions, local chambers of commerce, training agencies, trade associations, local authorities, development agencies, innovation centres, clerical bodies, unions, government agencies providing premises, land and infrastructure, business service organisations, marketing boards', dynamic clusters cannot thrive (Keeble *et al*, 1999 referring to Amin & Thrift, 1994)

#### iv) Regional insularity

On the one hand clusters can be wholly localised entities as was originally the case with industrial districts in Italy However, in order for clusters to become internationally competitive it is suggested that exposure to global networks and global market opportunities through the presence of 'leader firms' in a district or area can prevent regional insularity and therefore assist in the cluster development process (Rosenfeld, 2000) The notion of the leader firm is one which is gradually being worked into new models of inter-firm networks within industrial districts (See Chapter 7 for a more detailed discussion of leader firms)

Carbonara (2002) for example, suggests that industrial districts have 'modified their configuration, leaving the traditional structure of Marshallian ID and evolving towards less spontaneous forms of co-ordination' Increasing importance is being placed on the role of large firms which coordinate the district's activities and have contractual power over the firms they work with Strategies of leader firms dictate the type, level and extent of inter-firm relationships within and outside the district Leader firms, Carbonara continues, determine the nature of linkages developed more so than the local social and cultural factors The case study presented in Chapter 7 (on fish processing) sheds further light on the role of a leader firm in the local economy and shows that it can bridge gaps in technical information by acting as a source of know-how as well as a funnel through which external knowledge is channelled

v) Lack of skills

Little elaboration is required on this point as it has already been shown above that in order for a cluster or industrial agglomeration to emerge and grow a specialised pool of skilled labour is required Therefore if a region or locality is devoid of a skilled workforce or where there is little potential to develop a skilled workforce – that is through education and training programmes – then cluster development will be severely impeded In the Bakery Industry Case Study (Chapter 9) we identify a significant skills shortage This combined with a number of other factors can explain the failure to develop a cluster

## **2.8 Alternatives to Clustering The Stand-Alone Firm**

Up to this point we have been fleshing out the conceptual and theoretical reasoning behind cluster formation We have however not yet considered the possibility of an alternative to the cluster formation – one where firms operate independently of one another – i.e. the stand-alone firm

As we had no reason to assume *a priori* that an empirical investigation of North Dublin's industry would reveal industrial clusters an unbiased and impartial reading of the literature was required This involved acknowledgment on the one hand that



firms can be 'stand-alone' and on the other that firms can be part of dynamic clusters. Awareness of these two stances is made all the more important given the context within which this investigative study is framed. As outlined in Chapter 3, clusters, at least in the Porterian sense, are not an apparent feature of Ireland's economic landscape. Although clusters in the industrial district sense have been found to exist in localised and regional settings in Ireland there is a distinct need to be aware that perhaps industrial organisation and structure do not conform to one or other of the established cluster models.

Before exploring three such models – Porter's clusters, industrial districts and regional systems of innovation – we need to incorporate the notion that perhaps firms act as 'stand-alone' entities rather than networked enterprises. Jacobson & Mottiar (1999) describe the 'stand-alone' firm as one that has 'completely free, open, arms-length market interactions with its customers, and no horizontal strategic alliances with similar firms'. In other words it has a set of 'black box relationships' (Garibaldo & Jacobson, 2005). In reality, Jacobson & Mottiar (1999) suggest, a firm that is not a member of or does not participate in network initiatives and whose operation is characterised by 'large numbers of buyers and sellers of an undifferentiated product' is a firm operating in 'the mythical perfectly competitive market structure'. Adding to the description of stand-alone firms, Garibaldo & Jacobson (2005) suggest that such firms have 'a low degree of integration and inter-firm collaboration. Neither company is interested in what happens inside the other. The pressure is overwhelmingly to reduce cost and time, not on adding value'.

It may be that no firms are entirely stand-alone and that there are no perfect clusters, it is likely that, without reaching any of the accepted definitions of 'cluster', groups of firms in a local environment provide evidence of some elements of clustering among them.

## **2.9 Industrial Clusters - Three Models of Development**

As described above the basis for the study of clusters lies in Marshall's concept of localisation and externalities. It is this notion that underpins three related streams of literature, all of which offer alternative yet partially overlapping explanations for the

existence of geographically approximate groups of interconnected firms and supporting organisations. The aim of this section is not simply to describe independently of one another the characteristics and mechanisms of all three – this would serve little purpose other than to summarise what has already been established – but to compare and contrast each of the three and find some common ground.

Porter's diamond model, regional systems of innovation and the industrial district model provide us with convincing evidence that close proximity of interconnected firms in a particular place produces some kind of externality. In Porter's model this benefit culminates in firm success on international markets due to four major factors: the nature of firm structure, strategy and rivalry, factor conditions, demand conditions (both domestic and foreign), and the presence of related and supporting industries. The dynamics of, or complex interaction between, these factors are not necessarily localised in scope although there is a strong emphasis on geographical proximity (Porter, 1998, Bergman and Feser, 1999).

Porter does argue however, in the introduction of his second edition of *The Competitive Advantage of Nations*, that despite his focus at the level of the nation the same framework can be 'readily applied at the regional, state and city level' (Porter, 1998: XXI). This is exemplified in an application of Porter's framework to the industrial district. Here, firm structure, strategy and rivalry is interpreted as entrepreneurial dynamism, small firm networking, and flexibility of organisation, co-operation as well as competition. Factor conditions refer to the local workforce whose role is 'central to the organisation of the successful district' (Pyke & Sengenberger, 1992). However, Porter does not provide us with a mechanism for translating his framework into a 'local system of social relations' unlike the industrial district model (Bellandi, 2002). Place other than space seems to be incidental in Porter's model. While factor conditions are attached to place, place is not at the centre of his model, the firm and firm competitiveness rather than territorial competitiveness seem to occupy this role.

Regional systems of innovation are, as the term would suggest, localised systems. Here economic performance of a region does not depend solely on the individual company performance but rather on the way in which companies interact with one

another and the public in the creation and dissemination of knowledge (Fischer, 2001) This interaction enables technological change which is 'the primary engine for economic development' (Fischer, 2001)

What is apparent from an initial reading of the literature is that all three concepts are characterised by some form of interaction. In fact, without such interaction or linkage there would not be a cluster concept. For Porter, this interconnectivity between players or firms usually takes the form of 'vertical (buyer/supplier) or horizontal (common customers, technology, channels etc) relationships' (Porter, 1998: 149). In industrial districts, interconnectivity too is characterised by these types of relationships but the emphasis is on structure and organisation through the 'fragmentation of economic activities into specialised units' (Staber, 2001). Networks are the mechanism through which co-operative and collaborative processes are developed (Staber, 2001).

To what extent is the interconnectivity of firms and externalities derived by co-location driven by place and to what extent is it driven by the players within that place? These three modes of industrial or economic development suggest that it is some kind of combination of these. Place may have little influence beyond providing the appropriate contexts in which industry can be supported and encouraged to grow. Any interconnectivity and externalities may depend upon the players themselves, i.e. the willingness of firms and supporting organisations to interact with one another within that place. Another consideration, external to place and related to the players is the influence of the particular sector to which the player belongs. It could be that sectoral trends and industry developments cause players to look for more innovative, more dynamic ways of conducting business and that the development of horizontal and vertical relationships within a particular place could assist in attaining an edge over their competitors in other regions and in other states. However, as we have suggested above, relationships take time to develop, pre-existing culture and "rules of play" that are conducive to inter-firm co-operation may be required before clustering emerges as a means of achieving competitiveness.

Fischer (2001) suggests that technological or sectoral systems of innovation and localised or territorially based systems complement one another and are not mutually exclusive. Elaborating on this, Fischer suggests that spatial proximity which is

necessary for a territorial based system of innovation does not automatically imply a system of innovation between co-located firms. Organisational proximity in the form of technological proximity – which ‘pertains to the association with the set of horizontal interdependencies within the scope of production relationships’ (Fischer, 2001) – is just as important as spatial proximity. Again, we are confronted with the interaction between local and global forces, global forces dictating factors and commodity markets and localisation (or regionalisation as Fischer calls it) enabling knowledge creation and learning. Regional systems of innovation, Fischer continues, are ‘grounded in collective action at a territorial level’ and are dependent upon the informal institutional arrangements i.e. the sets of rules, conventions and norms which prevail in a particular place. The regional system of innovation concept shares some common ground with the industrial district mode of development. The notion of the networked SME involved in collaborative and co-operative linkages with other firms and supporting organisations stems from the industrial district literature where ‘innovative capabilities and competitive efficiency have arisen from the organisational design established by the firms’ (Longhi & Keeble, 2000 referring to Brusco, 1982).

The systems of innovation approach has shifted its focus from the firm to the territory, it is no longer centred on the knowledge creating firm but rather the knowledge creating territory (although the firm is a constituent part of the territorial system) (Maskell and Malmberg, 1996, Fischer, 2001). Systems of innovation theories attribute a ‘critical role to technological, organisational and institutional learning in the process of innovation [and] stress that learning is an interactive and socially embedded process’ (Hirsch-Kremsen *et al*, 2005 referring to Lundvall, 1992 and Fischer, 2001). Amin (1999), in discussing the Emilian model, underlines the link between industrial districts and the recent literature on sources of learning and innovation. ‘The consensus seems to be that, while networks of technologically advanced firms tend to derive their dynamic competitiveness from access to the fruits of scientific knowledge, codified rules, technological advances and strategic leadership, loosely coupled small firm networks tend to rely more on informal, non-scientific and interactive knowledge as a source of competitive advantage’. A regional system of innovation could be classed as the outcome of interaction between firms

and organisations within an industrial district. It is an element of or advantage of industrial agglomeration.

The non-science based innovativeness to which Amin (1999) refers has received a great deal of attention in recent times through the work of PILOT, the main thrust of which is a departure from the conventional thinking on innovation, i.e. that it emanates only from high-tech industries and is the result of R&D. The findings of the PILOT case studies on innovation in low-tech industries, published in *Low Tech Innovation in the Knowledge Economy* (2005) reveal that innovation can and does take place within industries that have relatively low or even zero levels of R&D. Using a capabilities approach, Bender and Laestadius (2005) suggest that low-tech firms have 'innovation enabling capabilities' that are the result of '... processes of transforming and configuring generally well known knowledge, components and technologies developed elsewhere'. They show that these processes can be assisted by co-operation with external agents.

Edquist *et al* (2002) emphasise the importance of external co-operation and attach great weight to knowledge that is acquired through interactive processes. In their survey of firms' collaboration with other organisations in the development of product innovation in the region of East Gothia, they conclude that firms do not innovate in isolation. They present 'strong empirical support for the view associated with the systems of innovation approach that interactive learning between organisations is important in (product) innovation processes'. Commenting on the role of location they found that 25 per cent of firms had their collaborating partner located close to them or within the same region.

It is clear therefore that some of the dynamics of clusters (industrial clusters and industrial districts included), i.e. interaction amongst economic actors, relational exchange that builds trust and leads to co-operation, are shared with the systems of innovation approach. The outcome ultimately from any of the three development models – Porter's clusters, industrial districts and regional systems of innovation is the creation of a competitive advantage.

## 2.10 Towards a Theoretical Framework

In building a theoretical framework we begin by answering a question posed above: To what extent do players (i.e. firms and non-firm organisations) drive inter-firm relationships and linkages? In answering this question it is inevitable that we incorporate another question: Do sectoral trends influence or determine the nature and dynamics of inter-firm relationships? By probing these areas we can perhaps begin to position and rank the overall role and function of place within cluster development and ultimately assist in our empirical analysis of industry in North Dublin.

### 2.10.1 *Linkages Driven by Players and Sectors*

According to Scott (2001) linkages are driven primarily by the sector to which firms belong. In other words, certain sectors are characterised by 'intricate networks or complexes of producers bound together in relations of specialisation and complementarity'. Scott suggests that these characteristics have a 'number of far-reaching geographic consequences'. Forces at work within a particular place seem to be secondary to the sectoral forces which are at work within the global context but which, at the same time, have local implications depending upon certain factors. Scott outlines the various scenarios for linkage development within a specific place rather than linkage development in the form of long distance or cross border relationships. These pertain to cost factors, i.e. where networking or linkage development incurs a high cost per unit of distance. In other words, where transactions involve 'frequent unpredictable and constantly shifting face to face encounters' then there is a strong incentive for firms to locate within close proximity to one another.

However, in contrast to this Scott outlines a situation where geographic range may be extended, i.e. in circumstances where distribution of a final product incurs low costs per unit of distance. An important factor, therefore, in the development of localised linkages pertains to the stage of production in the manufacturing process to which an individual firm belongs. This, according to Scott, will determine the nature and extent of linkages created within a particular place.

It may however be too simplistic an approach to assume that the production stage to which a particular firm belongs is a determining factor in the creation of localised co-operation. Take for instance an existing agglomeration of industrial enterprises perhaps involved in similar or complementary stages of production which for historical reasons related to family and tradition have meant that a presence in that particular place has been maintained over a number of years. The extent of interaction between the firms is limited to sharing of the skilled labour force, little other dynamic interaction takes place. Within this hypothetical industrial zone there may come a time when inter-firm co-operation becomes essential in order to maintain a competitive edge (Schmitz, 2000). In addition to incidental external economies (e.g. access to skilled labour force) more deliberate or inorganic externalities are shaped by firms' desire to overcome crises or to access new opportunities through joint action and 'collective activism' (Schmitz, 2000). Relying on spontaneous effects of co-location Schmitz suggests is insufficient. A focus on 'consciously pursued action' is required if a competitive edge is to be maintained or crises overcome.

From this we can assume that dynamic interaction can be created where previously there had been none but this is largely dependent upon firm initiative and/or sectoral pressure to achieve greater competitiveness. Regardless of the stage of production more collaborative processes may be called upon to achieve firm competitiveness and in doing so improve the overall dynamic of a local industrial agglomeration. Note, however, that even in this example the pre-existing co-location may be a prerequisite for successful collective activism.

The relational assets created are not simply the outcome of co-location in space, however. Although geographical proximity between firms seems to assist in the process, they are the result of firm strategy to become more innovative (Capello, 2002). Desire to tap into local and tacit knowledge for commercial purposes is largely dependent upon the knowledge intensity of the particular industry or sector (McGee & Sammut Bonnici, 2002). Innovative capacity of firms relies not only on their own capabilities in terms of research and development as well as product and process improvement but also on the opportunities to co-operate with external partners (Revilla Diez, 2002). Interaction is not purely localised although it can be localised in several different locations for say a MNE with a number of subsidiaries in different

countries. A global network where there is constant exchange of ideas and experience with co-operative partners external to the region or state means that local knowledge is circulated globally (Revilla Diez, 2002). Interaction at a spatial level is therefore dependent upon the extent of sectoral concentration and the particular mix of firms and supporting organisations that are willing to actively participate in linkage development.

### **2.10.2 *Spontaneous Interaction***

It is important to distinguish between modes of co-ordination among cluster members which are spontaneous and those which are driven by the strategies of leader firms. We touch on both above, however, we need to examine more closely the exact workings and implications of each.

Spontaneous forms of co-ordination are characteristic of the Marshallian industrial district and of the Italian industrial district in its traditional form (Carbonara, 2002). Spontaneous interaction is interpreted as loosely structured forms of network organisation which possess a 'collective identity common to local actors' rooted in a unique social and cultural context' (Coro & Grandinetti, 1999).

Despite intense networking and co-operative relationship building efforts much of the vertical co-operation in traditional industrial districts is structurally weak. This is due to the fact that interactive communication and co-operation involved in the processes of production specialisation, learning and innovation, and knowledge diffusion are self-organising (Coro & Grandinetti, 1999). It is now acknowledged that in order to sustain these processes and for them to remain effective in the generation of territorial competitiveness 'the invisible hand determining the strategies of the system becomes more and more visible' (Carbonara, 2002). In other words there is a movement away from spontaneous forms of localised interaction which rely simply on shared customs and social values towards a more organised territorial system where specific firms or institutional entities take a more measured and active role in the co-ordination of network activity.

### **2.10.3 *Interaction Driven by Leader Firms***



At the heart of this more structured less organic form of localised interaction lies the leader firm. Growth strategies of leader firms are the driving force in 'new models' of networking in industrial districts according to Carbonara (2002). The contractual power that leader firms possess over other local firms (with which they work) means that firms that have contractual ties to the leader firm in order to survive, must conform to the standards being set by the leader. Without leader firms taking charge and leading the group, according to this argument, there would be little structure within the networking process. The growth strategies that Carbonara refers to, involve processes which are both external and internal to the firm and are in some cases driven by firms' desire to become more innovative. Companies, to access or tap into locational strengths, need to deepen relationships with their most sophisticated local customers (Porter & Stern, 2001) and suppliers.

If a firm's strategy is to become more innovative through external partnerships then their strategy will impact upon the nature of localised relationships in general. The leader firm submerges itself in a relationship building process which elevates or pushes its external partners, whether they be trade associations, universities, suppliers or customers, to achieve the same high levels of communicative relations from interactive processes with other local clients or customers (Porter & Stern, 2001). A cumulative process emerges as a direct result of leader firm strategy. It is therefore apparent that the presence of a leader firm within a particular place can have a significant impact upon the nature of interactive processes within that particular place. Examples of leader firms that have had a huge impact on their home regions include large, innovative firms like Siemens and Bosch in Baden-Wurtemberg and Benetton in Northern Italy.

Can we assume therefore that without leader firm presence the potential for dynamic interaction and linkage building is severely impeded? Affirmation of this assumption is logical if for instance there is no other 'visible hand' active in the co-ordination of interactive processes. However, leader firms are not the only 'visible hand' active in networking processes, non-firm organisational actors too can facilitate in the process by creating a positive environment for linkage development.

Note that Chapter 7 discusses the role of the leader firm in local and regional economies in more detail. Included also in Chapter 7 is a general discussion of the evolution from organic to co-ordinated interaction.

#### **2.10.4 Interaction Facilitated by Organisations Other Than Firms**

‘The equilibrium between co-operation and competition does not occur naturally but usually requires the positive action of some institutional actors, from local government to trade associations, unions and banks’ (Coro & Grandinetti, 1999). Institutions like universities have a vested interest in the performance and competitiveness of local business just as local businesses have a vested interest in education (Porter, 1998a). Therefore, organisations other than firms can and do have an active role to play in ‘the new economics of competition’ (Porter, 1998a). But how can they facilitate linkage development? Universities can create ties with business through the creation of incubator units on campus, thereby creating a ‘culture of research collaboration’ between business and institution and an environment where collective learning leads to innovation (Keeble *et al*, 1999).

Institutes, however, may not have a direct role in facilitating interactive processes, their role may be one which provides ‘collective benefits to firms from ideas, research capability, information, skills, supply structures and services [which are made] available through recognisable institutions’ (Keeble *et al*, 1999 referring to Amin & Thrift, 1995). Garibaldi & Jacobson (2005) suggest that non-firm organisations like universities and trade associations play a supplementary role in firms’ innovation processes that enables them to add to their informal tacit knowledge bases.

Sengenberger & Pyke (1992: 25) highlight the local authority’s role as a ‘social coordinator’ in bringing various interest groups together to create collaborative network processes and service institutions in industrial districts. What is required in order for these co-ordinated processes to work successfully is the active participation of firms. Linkage development facilitated by firms and non-firm organisations are not processes that operate independently of one another but rather operate in an interdependent manner, mutually reinforcing one another. Institutional thickness is

important in setting the overall context or framework in which territorial cluster development can take place

### **2.10.5 *Place in Context***

‘The mere co-location of companies, suppliers and institutions creates the potential for economic value, it does not necessarily ensure its realisation’ (Porter, 1998a) Piore (2001) suggests that territorial competitiveness is based on the social relations that exist among the people who live within a district or region. Garibaldi & Jacobson (2005) highlight the importance of social context for both ‘technological evolution and innovative capacity’ and suggest that regional clusters ‘are places where close inter-firm communication, socio-cultural structures and institutional environments stimulate socially and territorially embedded collective learning and continuous education’

While we do not dispute this there is a need to consider physical characteristics as well and acknowledge that they act as the trigger for the development of specific industries in particular places. In other words industry locates in places where there are positive factor conditions. Local labour markets, human capital and interpersonal networks are ‘inherently localised’ and are therefore an inherent part of ‘place’ (Camagni, 2002). Industry must have some attachment to place if it is to utilise these factors to its advantage. This is generally referred to as embeddedness – ‘an embedded economy consists in economic activity which is dependent on resources that are territorially specific’ (Garibaldi & Jacobson, 2005 referring to Storper, 1997). Firms and supporting organisations are attached to place but some firms may be attached to a number of different places if, for instance, the firm is a MNE with a number of subsidiaries in a number of different countries. The depth of attachment or embeddedness is what determines the extent of cluster development in a given region (Markusen, 1996). Attachment in the form of network relationships as we have discussed previously may reach beyond regional and national geographical boundaries. However, part of a cluster may be contained within a given region.

## 2.11 Transactional and Contextual Environment

To assist in the investigative process and indeed the analysis of inter-industry differences (Chapter 10) as revealed in the three case studies – fish processing, printing and bakery (Chapters 7,8 and 9) a framework is required that acknowledges the theories and concepts discussed in this chapter. To do this we use the concepts of transactional environment and contextual environment to shed light on why elements of clustering can be found in some industries (i.e. printing and fish processing) and why it is absent from others (i.e. bakery). Garibaldo & Jacobson (2005) use these conceptual tools to analyse the role of company and social networks in low-tech industries and describe them as follows:

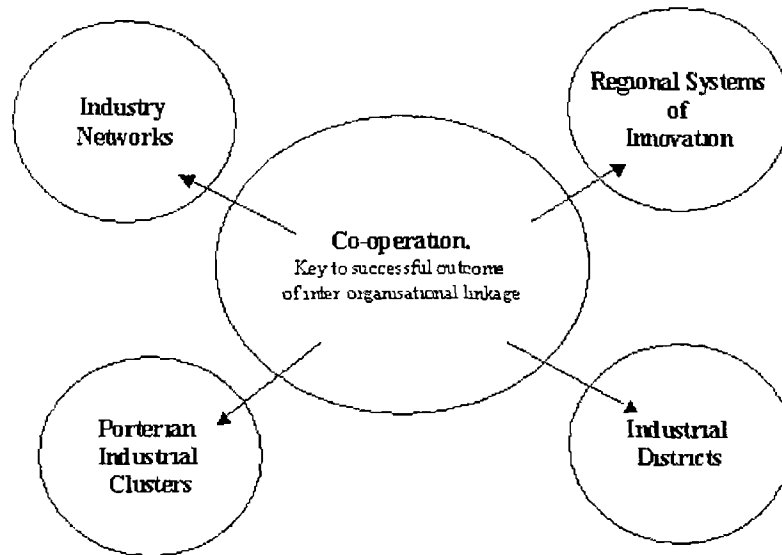
‘The “transactional environment” (Trist, 1976, Van Beinum in Naschold, 1993) of an organisation is the one with which it interacts in carrying out its primary task, however, there is also a broader ambient, beyond that relating to the primary task, which can be called “contextual environment”’

The contextual environment can be made up of social institutions, conventions, norms and trust – mostly non-physical features that are embedded in place and specific to a given location. The transactional environment is a non-spatial one in which both physical and non-physical features are elements (Garibaldo & Jacobson, 2005). It refers to the environment in which goods and services are exchanged and therefore includes industry characteristics such as the nature of competition (as discussed in Section 2.4.5). We have shown in this chapter that the contextual environment can have implications for the transactional environment – although we did not expressly state it in this way. For example, trust (an element of the contextual environment) facilitates co-operation. Co-operation alters the transactional environment by creating inter-firm networks that form the basis of regional systems of innovation and industrial districts. The transactional environment is thus altered from one containing market relationships to one of more collaborative exchanges.

We highlight the role of co-operation because of its significance in the formation of various localised clusters (See Figure 2.2). What these various localised clusters have

in common is the role played by the contextual environment in shaping their respective transactional environments

**Figure 2 2** Co-operation at the Centre of Various Localised Clusters



## **Chapter 3. Clusters in the Irish Context**

### **3.1 Introduction**

The purpose of this chapter is to outline how industrial policy and development in Ireland over the years has shaped the present day industrial climate. This is extremely relevant as historical circumstances have an important role to play in determining whether clusters will emerge or not (Rosenfeld, 2002). Past decisions can directly and indirectly influence development trajectories. Included in this Chapter is an examination of research conducted to date on industrial clusters in Ireland. We outline the main findings and discuss their relevance to the examination of industry for cluster activity in North Dublin.

### **3.2 Irish Industrial Development and Policy – A Brief History**

Following the abandonment of the protectionist policies (1930s to late 1950s) ‘industrial policy has been outward looking and has aimed to develop internationally competitive industries’ (Clancy et al, 1998). The late abandonment of protectionism however means that Ireland is classed a ‘late-comer’ to industrialisation (Sweeney 1999, referring to O’Malley, 1989). The growth in Ireland that followed the outward looking strategies was attributed to investment by foreign owned multinational enterprises (MNEs) that chose Ireland as a location from which to produce for export markets (Clancy et al, 2001). Location of MNEs in Ireland was driven by the availability of grants and tax concessions. Fuelling the attractiveness of Ireland as a location from which to export was its membership of the EC which came into effect in 1973, assuring access from Ireland to the large EC market (Clancy et al, 2001).

The presence of MNEs made a significant contribution to industrial growth in Ireland. O’Malley (1989: 155-156) notes the importance of MNEs.

'By the mid-1980s foreign firms accounted for more than 35% of manufacturing employment, with over three-quarters of this employment being in firms which had started since the 1950s. The increase in employment in these foreign new industries was more than sufficient to account for all of manufacturing employment growth since the mid-1960s when trade liberalisation began. Even more striking had been the contribution of foreign firms to export growth with 85% to 90% of their output, on average going for export'

It was only when foreign-owned manufacturing declined between 1980-1987 that outward-looking policies were brought into question. This decline coupled with concerns over 'limited purchasing linkages and withdrawals of profits from the country' (Clancy et al, 2001) suggested that continued reliance on foreign-owned firms as both exporters and employment providers 'was no longer, on its own, an adequate strategy for industrial development' (Clancy et al, 2001)

Despite strong industrial growth experienced in the 1960s and 1970s indigenous industry failed to make its mark in terms of employment growth and export development (O'Malley, 1989: 102). Poor performance of indigenous industry combined with over-reliance on foreign-owned firms signalled the need for a shift in policy.

Focus on indigenous industry and the 'integration of foreign-owned enterprises into the Irish economy' was incorporated into policy documents during the 1980s (Clancy et al, 2001). Barry et al (1999: 61) suggest that there has been 'a noticeable improvement in the performance of the indigenous sector since then'. They suggest that the expansion of existing firms rather than the establishment of new ones were responsible for job creation in the indigenous sector. This can be directly attributed to policy initiatives especially those outlined in the White Paper on Industrial Policy (1984) which stated that the aim should be to 'develop larger and stronger firms by building on those with a reasonable track record' (Clancy et al, 2001)

Clancy et al (2001) suggest that the average growth rate of 10 per cent experienced in the industrial sector since 1987 is due largely to increases in foreign direct investment (FDI). They show for example that foreign-owned firms increased their share of manufacturing employment from 43 per cent to 47 per cent and increased their share of manufacturing output from 52 per cent to 66 per cent between 1987 and 1996. Indigenous industry also experienced significant improvements, for example in the nine year period between 1988 and 1997 indigenous employment grew by nine per cent, exceeding both EU and OECD levels (Barry et al, 1999). The substantially increased share of foreign owned firms simply means that this group of firms grew much faster than indigenous firms.

### 3.2.1 *Over-Reliance on MNEs?*

The significant shares of foreign owned firms in employment and output – and even higher in exports – suggests the need to ask whether the economy is over-reliant on relatively footloose MNEs. Barry et al (1999: 69) suggest that fear of over-reliance may be well founded. They outline that success of indigenous industry is based on comparative advantage while success in attracting foreign direct investment is based on absolute advantage. Absolute advantage is something, they suggest, which can be lost overnight while comparative advantage is that which can be subjected to change but cannot be destroyed entirely. By this rationale fear for health of the economy may well be justified.

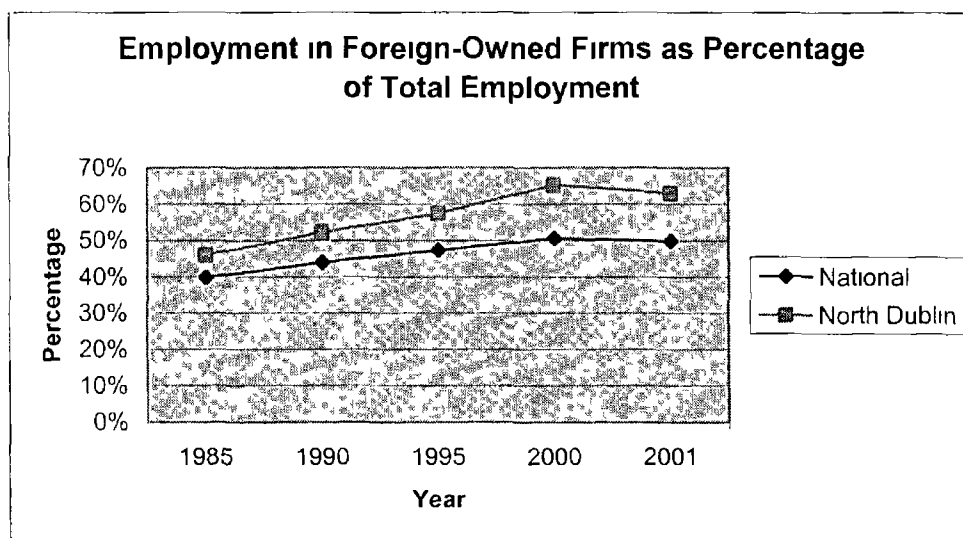
Barry et al (1999: 70) believe however that the economy has ‘earned a sufficiently high return from its specialisation (in MNE-dominated sectors) to pay for increased risks of instability’ associated with such high levels of FDI. Their reasons for thinking this relate to the opportunities that have been created for ‘learning by doing’ and through the generation of tax revenues which they feel can enable the economy to ‘climb the ladder of comparative advantage’ and contribute to the development of ‘physical and human capital infrastructure’. They suggest also that the collapse of FDI and any catastrophic implications may be overstated depending on the extent to which linkages have been developed with the indigenous economy. This general support for encouraging FDI, despite an awareness of the risks, is echoed in the Autumn 2003 *Quarterly Bulletin of the Central Bank*. The downside of employment shocks arising



from recessions in the small number of MNE-dominated sectors on which the economy is specialised, is offset, according to the Central Bank, by growth in ‘the good times’

Given the fact that North Dublin displays (and has in the past displayed) a relatively higher proportion of employment in foreign owned firms than that at the national level (see Figure 3.1) one would consider the strength of linkage development between the foreign owned and indigenous sectors of vital importance to sustained industrial development for both sectors in North Dublin. The alternative mode of development could be one that is built on the strength of certain indigenous sub-sectors, that capitalises on existing inter-firm co-operation and perhaps, where appropriate, incorporates some level of interaction with foreign-owned firms. Section 3.3.2 describes how previous indigenous-foreign firm links failed to be sustained.

**Figure 3.1** Employment in Foreign-Owned Firms as Percentage of Total Employment



Source: Forfas Unpublished Employment Data

It is clear from Figure 3.1 that successive policies aimed at attracting overseas investment into Ireland have had a significant impact upon employment in North Dublin. An understanding of the dynamic of indigenous sectors (a contribution to which is made through the case studies presented in Chapters 7 to 9) is made all the

more pertinent in the context of regional dependency on MNEs for development. As noted in Section 2.3.3 of Chapter 2 however the presence of foreign owned MNEs can prevent regional insularity but only where there is some kind of inter-connectivity between MNEs and indigenous firms.

### **3.2.2 Industrial Policy – The Regional Element**

As we are concerned with industrial clusters at the local and regional level it is worth highlighting some aspects of policy that have, over the years, endeavoured to incorporate the notion of regional industrial development. Barrios et al (2003) indicate that ‘the regional dimension has been an important aspect of Irish industrial policy for more than 50 years, although it has undergone considerable changes’. From the Underdeveloped Areas Act of 1952 which provided designated areas with grants for machinery, equipment, land and buildings to the Regional Industrial Plans of 1973 to 1977, which focused on the creation of town clusters within designated areas so as to ensure the ‘maximum geographical dispersion of new industrial development’, policy has had a keen focus on regional development.

The ‘target town’ approach which involved the setting of specific job creation targets, the purchase of industrial sites and building of advance factories by the IDA so as to influence the location of inward investment was continued in ‘The Regional Plans for 1978 to 1982’ (Barrios et al, 2003). After 1982

There was a marked change in Irish industrial policy in that an explicit national strategic industry component, namely trying to attract hi-tech foreign multi-nationals to jump-start the virtually non-existent indigenous high tech sectors was given priority over regional dispersion (Barrios et al, 2003).

Attracting high-tech foreign owned industry into the country was given priority over the regional dispersion of MNEs. Barrios et al (2003) suggest that this is still more or less the case. However, considerable focus has been placed on attracting inward investment to the borders, midlands and west of the country (the BMW region) over other regional locations (Agnew, Interview, 2002). The National Spatial Strategy

(2002) also provides evidence of an increased priority being given to regional development

### **3 2 3 Regional Development – Implications for North Dublin**

According to the IDA (Agnew, Interview, 2002) the increasing focus on more even development in Ireland will not be to the detriment of industrial development in North Dublin, development will proceed in specific industries/sectors such as financial services and shared services. Despite higher grants and incentives for locating in the more 'disadvantaged' areas such as the BMW region, foreign-owned firms will choose the location most appropriate for their business. Barrios et al (2003) are in agreement with this view having conducted empirical investigations on the effect of public incentives and agglomeration economies on MNEs' location choice in Ireland. They found that high-tech multinationals locate 'in urban centres in order to avail of knowledge-related spill-overs from the diversity of industries'. We can assume therefore that urbanisation economies rather than the availability of incentives are a key factor in determining the location of foreign owned firms. North Dublin as part of the greater Dublin region can offer these locational advantages.

Despite the development agencies' (IDA and Enterprise Ireland) regional focus there has, with few exceptions, been little attempt to locate similar or related companies in designated locations i.e. a working cluster policy. Examples of these exceptions are the International Financial Services Centre in Dublin and the pharmaceuticals sector in Ringaskiddy, Cork.

### **3 3 Policy Interest in Clusters**

The origins of the cluster philosophy in Ireland can be traced through a number of key documents and initiatives, the first of which is the Telesis Report. Although the Telesis report (1982) did not expressly refer to 'clusters' it did suggest that integration between domestic and overseas sectors operating in Ireland was crucial to economic success. In effect, it advocated the establishment of linkages between firms, which to a certain extent constitutes cluster development. Telesis influenced policy makers, and was followed by the White Paper on Industrial Policy in 1984. Among other

things this led to the establishment of a National Linkage Programme which, however, had mixed results. It was not until the publication of the Culliton Report in 1992 (itself influenced by the work of Porter, 1990) that the term 'cluster' explicitly entered the Irish industrial policy context. The report recommended that a 'policy of identifying niches and segments and building clusters should be adhered to'. Since then industrial policy makers in Ireland have had a keen focus on clustering as a means of creating and sustaining competitive advantage.

### **3.3.1 *Elements of Cluster Development***

Prior to and following the publication of Porter's *Competitive Advantage of Nations* (1990) and the Culliton report (1992), both of which were to generate a wealth of academic debate on the topic, there were significant steps taken to foster a culture of networking in Ireland which if managed correctly could be used as 'a route to clusters' (Cooke, 1998). Cooke (1998) cites the National Linkage Programme as one such route. The programme aims to integrate the foreign and indigenous sectors through supply chain development. The programme, as Cooke (1998) outlines, has in the past come under criticism for its 'selectivity of supply-firm candidates which excluded the majority of indigenous suppliers' and for an inadequate level of co-ordination between the development agencies in administering the programme. The programme is still running today but at a smaller scale than it did approximately ten years ago.

### **3.3.2 *Linkage Development in North Dublin***

The Regional Linkage Programme has had some success in the past especially in North Dublin where overseas firms in the electronics and light engineering sectors established supply links with local firms involved in the manufacture of 'mechanical parts' e.g. plastics, metals and printing materials. However, the demise of this sector in North Dublin in recent years and the demise or re-location of key customer firms like Amdahl, Motorola, Celestica and Gateway to parts of Eastern Europe has forced the Linkages Department in Enterprise Ireland to look outside the region and even the nation in order to salvage ties and create new links for indigenous firms operating in the sector. Measures, which include partnership development and start-up operations

of Irish firms in eastern European locations, are currently being deployed (Kennedy, Interview, 2003)

While the Linkages Programme was successful in integrating indigenous and overseas firms in North Dublin (albeit to a limited extent and for a limited period) its sustainability, for a number of reasons, was always questionable. Firstly, local sourcing by overseas customer-firms in North Dublin was limited to basic parts and sourcing of high-technology components was tied to international supplier bases. Secondly, indigenous firms' over-reliance on subsidiaries of MNEs meant that international business was not sought. Although overseas firms cannot be compelled to source all inputs locally the Linkages Programme should have endeavoured to broaden the customer bases of its indigenous client firms so as to minimise economic fall-out. Cooke (1998) suggests that in order for the Linkage Programme to be more successful it needs to broaden its appeal and place itself in the context of clustering and systemic innovation.

In a recent policy document entitled *Ahead of the Curve – Ireland's Place in the Global Economy* the Enterprise Strategy Group (2004) reinforce the principles of the Culliton Report when they outline that enterprise in Ireland will succeed by focusing on niche areas of activity through a number of different means which include *inter alia* 'clusters or groupings with specific expertise'. In the pursuit of cluster development, they outline some specific mechanisms, primarily business networks. Through business networks, that combine partners from financial, educational and research institutes as well as firms, they suggest that small firms can overcome issues relating to scale. They recommend that state funding be made available to groups of interested parties working in collaboration. The emphasis, in policy, has shifted from the promotion of purely economic linkages to more co-operative ties.

Furthermore, the report recognises that networks may be either formal or informal and suggests for example that 'participants may share information on markets [Chapter 7 shows evidence of this among fish processing firms], they may co-operate to address a customer need that they could not address individually [this is evidenced in the Printing Consortium of Ireland – the focus of Chapter 8], they may share interests in technology, standards or regulations, or they may act in concert to

commission research or to articulate skills requirements' The case study findings are therefore highly topical in the context of current enterprise and cluster development policies

### **3 4 Research on Clusters in Ireland**

As indicated above substantial policy and academic debate on clusters and their relevance to Ireland ensued after the publication of the Culliton Report (1992) Much of the work, however, has been applied at the national level and has relied upon both Porter's model and methodology to investigate empirically the existence of clusters There has been, to date, only limited investigation conducted at local and regional level These regionally focused studies have adopted an alternative framework for investigation – the industrial district model – and have therefore been limited to single sectors Their findings are none the less of value

#### **3 4 1 *National Studies***

O'Donnellan (1994) was the first in Ireland to examine Irish manufacturing for the presence of Porter's sectoral clustering He identified a number of sub-sectors which displayed regional spatial concentration The, 'strong spatial association between sectors' he believes does not provide conclusive evidence of clustering especially given the fact that low levels of vertical linkages were uncovered through input-output analysis The fact that spatial concentration in Ireland does not necessarily imply cluster activity is an important finding Further to this, O'Donnellan (1994) could find little evidence to link the strong performance of the electronics and chemical sectors to any clustering activity in those sectors Strength of performance could be attributed more to the presence of MNEs

What is most notable about O'Donnellan's research and most relevant to this dissertation are his suggestions in relation to localised clustering While he found little evidence of strongly performing clusters at the national level he does indicate that 'more subtle or localised clustering' could make a difference to performance and that government support for 'local specialised infrastructure' should be reinforced Despite O'Donnellan's early indications that localised clustering may be more

appropriate to Irish industry it was not until a number of other national studies were conducted and findings published that a sectoral and regionally focused study made its way into print

In 1995 following international debate on the importance of industrial clustering to sustained competitive advantage the National Economic and Social Council (NESC) commissioned a study 'to examine the importance of industrial clusters for industrial development, and the suitability of Porter's clustering model, in the Irish context' (Clancy and Twomey, 1997) The commissioned research culminated in a series of papers which applied Porter's cluster analysis to a number of sectors, viz the music industry (Clancy and Twomey, 1997), the software industry (O'Gorman *et al* 1997) and the dairy industry (O'Connell, 1997) In 1998, NESC continued to probe the cluster concept and published the proceedings of a seminar entitled *Sustaining Competitive Advantage* Not only was Porter's model flagged as inappropriate in the Irish context but alternative strategies for achieving competitive advantage were highlighted, in particular modes of networking as a route to cluster development (Cooke, 1998)

What the Irish research, conducted at national level, offers us is conclusive evidence that a departure from 'Porter as a central plank in Irish industrial policy' is necessary (Clancy *et al*, 1998) National studies tell us that Porter's model has little validity in a small open economy like Ireland and is probably most suited to large mature manufacturing economies like Japan and the US Most notably the national research does not abandon totally notions or elements of clustering in the Irish context In fact, some go so far to say that there are 'appreciable benefits' to be obtained from groupings of connected or related companies, for example customer/supplier relations, competitive rivalry and the development of specialised pools of labour which should be built upon (Clancy *et al*, 1988, O'Malley and van Egeraat, 2000)

Appropriate modifications to Porter's approach identified by Clancy *et al* (1998) include recognition of the role that foreign demand plays in sustaining indigenous industry This is an acknowledgement that linkages between actors in clusters may extend beyond the traditional boundaries of the nation It is suggested also in the research that clusters in Ireland are unlikely to contain all the components of a full

scale cluster such as suppliers, customers and related industries (O'Malley and van Egeraat, 2002). This emphasises an important point, i.e. that Porterian clusters in their entirety are unlikely to be found in Ireland.

### 3.4.2 *Alternatives to Porter – Local and Regional Studies in Ireland*

Research in Ireland on industrial agglomeration has not been limited to the Porter model. Jacobson and O'Sullivan (1994) examined the origins and early evolution of the software manual printing industry (SMPI) in Dublin. They found that the relationship between suppliers (SMP firms) and the buyers (software publishers) that established a presence in Ireland, led to changes and improvement in standards and organisational structures within the SMP firms. The quality and standard required by the software publishers was 'very rigorous and exacting'. This meant that firms had to acquire specific standards such as ship-to-stock for example. The SMP firms, having to respond to rapid growth and large, repeat orders – where previously they had operated on the basis of "jobbing" – had 'to introduce new departments such as production control, quality control, scheduling, order and costing departments dedicated to serving the manufacturing process' (Jacobson and O'Sullivan, 1994). In this case the emergence of a group of high technology suppliers can be directly attributed to the establishment in Ireland of high technology MNEs. Among the disadvantages of the inter-firm relationships that developed between the suppliers and buyers within the SMPI, was 'the general dependence of the suppliers on the publishers [that was] exacerbated by the homogeneity of the suppliers'.

Jacobson and Mottiar (1999) followed with a study comparing the SMPI with the furniture industry in Co. Monaghan. They found a lack of networking in the former and explicitly identified the latter as an industrial district. The firms in the wooden furniture industry in Co. Monaghan exhibited a high degree of (horizontal) co-operation.

'Even direct competitors - like the two producers of fireside chairs – share information. They discuss customers, and will help each other to avoid giving credit to high-risk customers. At a more substantial level, two of the larger firms, McNally



and Finlay, and Sherry Bros share a brand name, Rossmore, under which their products are marketed in Britain'

Another notable characteristic of the Co Monaghan furniture industry is its number of spin-off firms – 'an important source of growth in industrial districts' (Jacobson and Mottiar, 1999) Of the firms surveyed, Jacobson and Mottiar (1999) found that 75 per cent were related either directly or indirectly to one furniture firm in particular – Coyle's It was within this firm that apprenticeships were served and skills and know-how acquired

In contrast to the furniture industrial district Jacobson and Mottiar (1999) highlight a distinct absence of horizontal co-operation, despite declining markets The close vertical relationships that they describe are unilateral rather than reciprocal They suggest that 'the relationships, and in some cases the firms themselves, are the results of decisions by the buyer firms'

Jacobson *et al* (2001) using the furniture industry as a point of reference explored industrial districts and networks as alternative modes of development in Ireland In exploring the dynamics of inter-firm relationships they note parallels with the Italian industrial districts, namely competition, co-operation (formal and informal), strong horizontal and vertical integration between firms and a number of spin-off operations While they acknowledge that some elements are absent they reiterate that what they have uncovered in Co Monaghan constitutes an industrial district What is most notable about the inter-firm dynamics documented is their relationship to industrial development They suggest that the survival of an individual firm 'is very much connected to the relationships it has forged with other firms' and that policy should take account of this (Jacobson *et al*, 2001)

In contrast to these co-located inter-linked firms Jacobson *et al* (2001) present a spatially dispersed network that effectively operates in the same manner as firms in an industrial district Through a Pilot Network Programme (PNP) initiated by Enterprise Ireland, three furniture firms set up a joint venture product development and marketing company by the name of TORC The manner in which TORC operates is that once a contract is won the business is fulfilled by one of the three network firms

on a rotational basis, depending upon their availability. Network involvement proved extremely beneficial to all three companies as the joint venture gave the firms the critical mass they required to enter overseas markets. It also improved their ability to obtain grants and assistance from the development agencies that as individual companies they would have been unable to attain.

Apart from the lack of spatial proximity this example of inter-firm co-operation and competition differs from the industrial district in Co. Monaghan in that it is 'embedded in a rich institutional environment'. These examples provide us with empirical evidence that co-operation between firms (whether spatially dispersed or spatially proximate) have strengthened indigenous industry albeit in a single sector or sub-sector. This reinforces the validity of an investigative study aimed at the local/regional level.

### **3.5 Discussion**

From this section we can conclude that policy, in particular the pursuit of foreign direct investment as a means of stimulating growth in the economy, has had a significant impact upon the mix of indigenous and manufacturing firms and their respective levels of employment in North Dublin. Chapter 5, which presents the industrial profile of North Dublin, shows this in greater detail. It is also clear that industrial policy at national level has had an effect on industrial development at a local level.

The research discussed in this chapter suggests that Porter's definition of clusters has less relevance in an Irish context than other, perhaps looser definitions of agglomerative development. Recent policy has been cognisant of this, acknowledging the role of enterprise led business networks for the creation of competitive advantage. Furthermore, the general sentiment expressed in this chapter affirms the decision in this thesis to focus on a mix of development models – like networks, industrial districts and systems of innovation (as detailed in Chapter 2) – rather than a single theory/model as a guiding framework.

## Chapter 4• Methodology

### 4.1 Introduction

The outcome of a cluster study largely depends upon the study objectives and the methodology used in the identification process. It is important therefore to highlight the merits and demerits of the various methods that can be used in the identification and analysis of industry clusters. The aim is to settle on a method or methods best suited to the setting in question, namely the local and sub-regional economy of North Dublin. In Ireland in general (although there have been some exceptions), cluster studies have tended to be performed at national level using what is known as the *top-down* or *Porterian* approach. As the focus of this study is the local and regional economy and not the national, a change in approach was called for. We outline the reasons why below and distinguish between *top-down* and *bottom-up* approaches as well as micro and meso levels of analysis.

Cluster identification methodology traditionally relies upon quantitative techniques to determine whether industry clusters exist within a particular place, region or nation. Increasingly, qualitative techniques are combined with more traditional quantitative ones to determine the nature and extent of clusters. We outline the role of qualitative techniques in building a more holistic approach to cluster analysis. The particular approach and methods of cluster analysis (i.e. case studies) used in examining industries and sectors in North Dublin are then outlined.

### 4.2 Top-down Vs Bottom-up Approaches

Brown (2000b) in referring to Legendijk (1999) suggests that there are 'two principal routes to cluster selection' the top down approach and the bottom up approach. The former involves compiling a list of clusters based on cluster analysis. Problems in relation to this approach, Brown suggests, relate to justification of why certain clusters were included and others excluded. If, as in Porter's approach, analysis is

based on 'hard' quantitative data it is difficult to reject. A good top-down approach should ideally identify clusters through use of various data reduction techniques like statistical cluster analysis or factor analysis (Bergman & Feser, 1999). If, however, it is simply based on policy-makers' pre-determined ideas about which industries should be developed into clusters – the notion of picking winners – rather than exploring those which present statistical evidence of clustering, then the selection process becomes tainted.

In contrast, a bottom-up approach is based on enterprise level analyses where the focus is on 'especially dominant and fast growing firms in their local industry networks and institutional settings' (Peters & Hood, 2000). This approach focuses on the specifics of joint action and co-operation among economic actors. Starting with individual sectors, the analyst attempts to identify clusters by searching for linkages with other economic actors – both in similar and non-similar industries. The analyst is then able to discern the nature of 'regional industrial interdependencies from the ground up, one sector at a time' (Bergman & Feser, 1999). This is the approach most commonly applied in the Italian industrial districts research (Brown, 2000b).

Depending upon the particular setting one approach may be more appropriate than the other. However, Brown (2000b) points out that 'in reality, the majority of clusters selected for policy help and support involve a combination of these two routes' (i.e. bottom-up and top-down) and that a mixture of these two approaches is probably the best method of cluster selection. Bergman and Feser (1999) suggest that these two approaches are options when pursuing cluster analysis using the meso-level approach.

### **4.3 Level of Analysis in Cluster Identification**

According to Feser (1998) the unit of analysis in Porter's *Competitive Advantage of Nations* is the national rather than the local or regional scale and at the national level Porter's 'clusters are conceived as broad industry groups linked within the overall macro economy'. His level of analysis is therefore macro in focus.

### 4 3 1 *Micro-Level Analysis*

Micro-level analysis 'tends to document one cluster per region usually that of its policy client' (Bergman & Feser, 1999) A micro level cluster analysis need not be so restrictive however It does, as Bergman and Feser (1999) suggest, provide a detailed study of single industries but this does not necessarily imply that only one cluster can be identified and analysed The presence or absence of one or more clusters is not precluded by the use of such an approach Techniques drawn from regional analysis such as location quotients (discussed below in section 4 4 3) can be incorporated to highlight relative concentrations of industries or sectors in particular places The outcome of this analysis offers initial evidence as to the presence or absence of clusters in a given location and not the overall micro-level approach itself

The advantages of adopting such an approach include among others the following

- Detailed examination can be performed on individual firms in concentrated sectors so that firm behaviour becomes apparent and the extent of linkage development highlighted This is especially beneficial where secondary sources of information on co-operative relationships are difficult to obtain
- Some of the important social and inter-personal factors in clustering are identified more easily at the micro level The importance of individuals' background and experiences emerges, for example in the building up of trust

The main disadvantage of the micro-level approach is that 'significant instances of region wide industrial clustering go unrecognised' (Bergman & Feser, 1999) as the focus is primarily on similar sector firms and not co-located firms from different sectors This approach should only be adopted where a region's leading industries have been identified and where there is a need or desire to understand how inter-firm relationships may be strengthened and built upon to achieve competitive advantage (Bergman & Feser, 1999) Even then, there is a danger of identifying characteristics – for example co-operation and trust – when they are not present to any significant extent This is a problem of any single case research, where the extent to which any

characteristic is present cannot be compared to other cases. For this reason, three case studies were conducted and the findings presented herein (see Chapters 7 to 9)

### **4.3.2 Meso-level Analysis**

According to Bergman and Feser (1999) where regions have 'little knowledge of their core regional strengths and potentials', use of techniques which facilitate 'a comprehensive investigation of virtually all sectors in the regional economy are needed'. Using OECD terminology they term these 'meso-level cluster applications'. In other words a meso-level cluster analysis provides for much broader multi-industry investigations. Given the fact that little exploratory work has been conducted on sectors and industries in North Dublin it was decided that the initial approach should be consistent with this level of analysis. However, there is a case for developing a micro-level approach once key industries/sectors have been identified. The techniques that Bergman and Feser (1999) suggest are appropriate in a meso-level approach, like Porter's, pose a particular problem in their application at regional level in Ireland due to the lack of suitable data. There are, we suggest, a number of ways to overcome this. We outline briefly below the technique Porter applied in *The Competitive Advantage of Nations* and the techniques Bergman and Feser (1999) offer as suitable for regional investigations and how these have been modified for our purposes.

## **4.4 Cluster Identification**

### **4.4.1 Porter's Approach**

Porter (1990, 1998) provides, in many cases, a good starting point for the identification of industrial clusters. However, his methodology is particularly problematic in the Irish context. Porter's method is essentially a top-down approach where 'competitive high points in the national economy are first identified using two main measures, namely world market shares and flows of outward direct investment' (Peters & Hood, 2000). Clancy et al (1998) provide this brief description of his methodology.

Porter's methodology for identifying the relatively competitive industries in a country requires that the country's exports of each product are calculated as a percentage of all country's exports (or world exports) of that product. If a country's share of world exports of a particular product is greater than its share of world exports of all products, this is taken as an initial indication that the country is relatively competitive or has a comparative advantage in that product.

As data on national or international trade flows for Irish regions do not exist it is therefore impossible to adopt such an approach in a local or regional setting (Morigenoth, 2001). Even if such data were available it would be inadvisable to adopt such a method, as testing of Porter's model by Clancy *et al* (1998) suggested that Porterian clusters were not an apparent feature of Irish indigenous industry. The rigid application of the Porter model in this case prevented researchers from exploring in an alternative manner the nature and composition of existing or potential non-Porterian industrial clusters.

#### **4.4.2 Input-Output Analysis**

Input-Output (IO) analysis can be used to determine industry clusters in both regional and national economies. IO tables describe the pattern of transactions between industries (Jacobson & Andreosso-O'Callaghan, 1996 p2) and facilitate the identification of interdependencies or value chains among sectors (Bergman & Feser, 1999). This, like Porter's, is an example of a top-down approach and is classed as a data reduction technique. As is the case with Porter's approach this method is eliminated by virtue of the fact that neither trade data nor IO tables are generally available at regional level in Ireland.

We are led by Bergman and Feser (1999) to believe that this is probably the most satisfactory method of cluster identification and that other methods (e.g. location quotients and expert opinion) are merely supplementary. We suggest however that they can be used even in the absence of the IO approach for cluster analysis in North

Dublin. However we do acknowledge that IO analysis would be beneficial were the data available.

#### 4.4.3 Location Quotients

'A location quotient (LQ) is a simple measure of spatial concentration based upon either employment or income' (Jacobson & Andreosso-O'Callaghan, 1996 p52). As a ratio of employment shares, the location quotient indicates the 'regional industry's share of total regional employment over national industry's share of total national employment' (Bergman & Feser, 1999). An LQ equal to one indicates that the share of employment in a particular sector and in a particular place is 'proportional to the total employment share of the country' while an LQ above one indicates 'a higher concentration of employment than that of the total employment share of the country' (Morgenroth, 2001). A sector with a share of one is known as 'residential'.

Isard's (1998 p24) expression for calculating LQs is as follows:

$$\frac{E'_i / E_i}{E' / E}$$

Where

$E'_i$  = employment in activity  $i$  in a given region  $J$

$E_i$  = employment in activity  $i$  in the nation

$E'$  = total employment in region  $R$

$E$  = total employment in the nation

This was used to calculate the LQs presented in Chapter 5.

The distinct advantage of applying such a technique to the North Dublin cluster analysis is that we can highlight 'what industry the region has and does not have' and 'the extent to which each industry is under- or over-represented in the region compared to say the nation' (Isard, 1998 p24). While this is in no way insignificant, especially given the fact that other techniques have proved inappropriate, it offers very little insight into the interdependencies within and between sectors (Bergman & Feser, 1999) and indeed between firms. As a fundamental part of the cluster concept,



it is therefore necessary to explore additional methods that can assist in determining if such linkages and interdependencies exist

#### **4 4 4 *Expert Opinion***

The use of expert opinion can provide some insight into linkages and interdependencies between actors in value chains. Bergman and Feser (1999) believe that regional experts such as industry leaders, public officials and members of development agencies 'are important sources of information about regional economic trends, characteristics, strengths and weaknesses'. The key to using this qualitative data effectively is to be aware that there may be a 'multitude of potential biases affecting each expert's views' (Bergman & Feser, 1999)

#### **4 5 *Approaches to Cluster Analysis in North Dublin***

Following the review of cluster approaches and methodologies and considering the limited number of techniques available to us it was decided that a two-step approach (as outlined by Bergman & Feser, 1999) would be most appropriate in analysing industry in the local and sub-regional economy of North Dublin. The two steps are as follows

- 1) A scan of the local/sub-regional economy using quantitative techniques
- 2) A detailed investigation, using qualitative approaches, of the industrial sectors or groupings identified in the scan

##### **4 5 1 *Methodology for Initial Scan***

In order to conduct a scan of the regional economy it was essential to have a comprehensive data set upon which analysis could be performed. In the case of North Dublin the data set had to satisfy two requirements, first, that it would provide sectoral disaggregation and second, that it would provide locational disaggregation. More often than not cluster studies, especially those based on political agendas, refer to broad industry groups or categories of business for example tourism, metals, professional services (Rosenfeld, 1997) rather than the individual sub-sectors within those categories that are responsible for growth in their particular industry or field.

The 'bottom up' approach to cluster identification as indicated above in Section 4.2 involves screening and selection of industry at local/regional level (Peters & Hood 2000). By examining the sectoral division of employment in North Dublin it has been possible to highlight the sectors and sub-sectors that form North Dublin's economic base (see Chapter 5). The raw data needed to identify the area's key industries were obtained from Forfas<sup>1</sup>, as the Census of Industrial Production (CIP) could not provide the level of sectoral and locational disaggregation required. The data were extracted from the *Forfas Annual Employment Survey*. This is a survey conducted at plant level for all existing indigenous and foreign manufacturing and services firms in Ireland which are either currently in receipt of development agency support/funding or have at some stage of their corporate life been in receipt of such support. Information collected at the plant level includes employment, sector of production, nationality of ownership and detailed location of plant.

#### **4.5.2 The Data Set**

The data set comprises employment figures with locational disaggregation by district electoral division (DED) and sectoral disaggregation to four-digit NACE code. Provided in this data set was an indication of whether firms were indigenous or foreign owned<sup>2</sup>. Data were organised so that they could be viewed as either an aggregate set for the whole of North Dublin or on an individual DED basis for the years 1985, 1990, 1995, 2000 and 2001. These years were chosen so that the evolution of industry in the region could be traced and so that an emerging cluster could be identified.

#### **4.5.3 Process of Scanning Data**

The scanning process comprised a series of scans – a summary of which is provided in Table 4.1. The data scans were as follows:

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<sup>1</sup> Forfas is the policy and advisory board for industrial development in Ireland. Under Forfas there are two agencies: one with responsibility for encouraging and managing foreign direct investment (Industrial Development Authority – IDA) and one with responsibility for supporting local firms (Enterprise Ireland – EI).

<sup>2</sup> Foreign owned plants as defined by Forfas are those in which 50 per cent or more of the shares are owned by foreign shareholders.

a Scan one

It was decided that analysis should commence at the most aggregated level i.e. at two-digit NACE code level to facilitate the identification of North Dublin's key industries, in broad and absolute terms. Distinction between employment in indigenous and foreign owned firms was made at this stage.

b Scan two

Once North Dublin's key industries were identified employment levels in those industries were compared to employment levels for the whole of Dublin and for the nation, using location quotients. This enabled us to identify the industries in North Dublin which were important in relative terms and which displayed a spatial concentration relative to the whole of Dublin and to the nation.

c Scan three

Growth in terms of employment in foreign owned firms, indigenous firms and both firm types combined was then assessed. Growth in the number of firms was also tracked over the period 1985 to 2001. Growth in the industries or sectors signalled their importance.

d Scan four

Disaggregation to four-digit NACE code was then performed. Again, use of location quotients enabled us to identify relative concentrations of sectors/sub-sectors within North Dublin. (See Chapter 5 for results)

**Table 4 1** Nature and Outcome of Data Scanning for North Dublin

<b>Process of Scanning Data</b>			
<i>Step 1</i>			
<i>Scans</i>	<i>Level of Analysis</i>	<i>Nature of Scan</i>	<i>Outcome</i>
<i>Scan 1</i>	2-digit NACE code	Employment levels "eye balled"	Industries which comprise North Dublin's economic base identified
<i>Scan 2</i>	2-digit NACE code	Location quotients calculated	Identified spatially concentrated sectors relative to whole of Dublin and Nation
<i>Scan 3</i>	2-digit NACE code	Employment & firm growth and decline examined over period 1985 - 2001	Growing and declining sectors identified Declining sectors eliminated from further investigation
<i>Scan 4</i>	4-digit NACE code	Location quotients calculated	Identified spatially concentrated sub-sectors relative to whole of Dublin and Nation

#### **4 5 4** *List of Sectors*

A list of sectors/sub-sectors based upon location quotient analysis was then compiled. This list was not deemed to be a list of clusters but rather a list of spatially concentrated sectors that displayed some cluster characteristics i.e. a relative concentration of activity, an adequate number of firms and a significant level of growth. In order for a sector to be placed on the list it needed to have a LQ above one and to have employment spread across three or more firms. The number of firms is of critical importance as concentrations of employment may be attributable to the presence of a single large firm in a given region. Morgenroth (2001) suggests that this issue arises in the new economic geography literature where measures used to identify clusters rely solely on concentration of employment and do not consider the number of firms involved. To disregard the number of firms would be to disregard the definition of clusters itself (see Section 2), which expressly refers to 'geographic concentrations of interconnected companies' (Porter, 1998 p53)

#### **4 5 5 Problem with Sector List – Acquisition of Additional Data**

Despite having compiled a list of key sectors and sub-sectors a problem was encountered in relation to firm identification. Although Forfas data are provided at enterprise level they do not, for reasons of confidentiality, disclose the name and address of the firm. We could not be sure therefore if the firms identified in the scan were in fact ‘key’ firms (Key firms are those which have an important role, or have the potential to have an important role, in cluster formation). We therefore needed to devise a way in which firms could be identified and at the same time establish whether or not they were likely candidates for cluster activity.

To overcome this problem an up to date listing of client firms from both Enterprise Ireland and IDA was acquired. In Enterprise Ireland’s case the list comprised only ‘*very active* and *active*’<sup>2</sup> clients whereas the IDA list detailed all clients. This enabled us to identify the firm by name, their employment level, the sector to which they belong and the development advisor’s name at the agency who advises them on a regular basis.

#### **4 5 6 Refining Sector List**

Following receipt of the agency lists a process began whereby key sectors (as identified in our scan of the local economy) were matched with key companies as identified by the agency. Where sectors did not contain key companies they were removed from the list and so a process of reduction was put in place. Once complete, we were able to identify both key sectors and key firms in North Dublin. The list detailed the sectors and firms that had, or had the potential for, cluster activity.

#### **4 5 7 Further Investigation Using Qualitative Sources**

In order to give this data some meaning – in other words to determine whether spatially concentrated sectors in North Dublin constitute clusters – we relied upon

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<sup>2</sup> Enterprise Ireland defines an active client as one that has one or more of the following attributes: Strong connections to the agency, export oriented, progressive in terms of product or process innovation.

qualitative sources, primarily research interviews. Interviews were conducted to gauge and evaluate the level of interdependency and to assess the nature of relationships among firms and between firms and non-firm institutions such as industry associations and development agencies. A number of different types of research interviews were conducted. These were as follows:

- 1) Interviews with development advisors at development agencies<sup>3</sup>
- 2) Interviews with industry association representatives
- 3) Interviews with co-ordinators of network initiatives operating within North Dublin
- 4) Interviews with firms

(See Appendix B for list of interviews conducted.)

#### **4.5.8 Usefulness of Interviews**

Interviews can provide in-depth information as to why co-operation takes place or does not take place among economic actors in sectors and industries. Schmitz (2000) found this to be the case in examining linkages among actors in clusters in South Asia and Latin America. The use of expert opinion can 'yield rich contextual information about the region's economy' (Bergman & Feser, 1999) and for this reason we consider the interviewing of experts to be of great value.

#### **4.5.9 Initial Interview Format**

Interviews at the early stage of research were conducted in a semi-structured manner. The interviewees were provided with both a description of the research and a list of topics for discussion (see Table 4.2 below). Arksey and Knight (1999) believe that such interviews are conducted with the express purpose of 'generating a script for subsequent more structured enquiries'. We concur with this view as data generated from our initial set of interviews determined a case study approach for the study of inter-firm dynamics within specific sectors.

**Table 4 2** Topics for Discussion at Initial Set of Interviews with Development Advisors

<b>Topic for Discussion</b>	<b>Details</b>
<i>Trends in Sector</i>	General trends as they pertain to Irish firms and to a specific set of agency client firms located in North Dublin
<i>Importance of Location</i>	Discussed in relation to the agency client firms – the aim of which was to establish how embedded firms were in North Dublin
<i>Firm Profiles</i>	Discussion of how firms emerged (e.g. could they be classed as spin-offs?) and any significant changes they may have gone through. The importance of the company on a local/national/international scale was also established
<i>Sourcing of Inputs and Selling of Outputs</i>	Location of transactions and the nature of transactions i.e. purely market or in some way co-operative
<i>Networks</i>	The degree to which client firms participate in networks and their perception of network involvement
<i>Levels of Co-operation</i>	Among firms and between firms and supporting organisations such as trade/industry associations
<i>Opinions</i>	Development advisors' opinions as to whether a cluster has developed or whether there is potential for development of same

These initial interviews were recorded and then later transcribed. From the data obtained at initial interviews it became apparent that there was very little evidence of inter-firm co-operation – the basis for successful clustering (as identified in Chapter 2). A number of the development advisors however described different modes of co-operation that triggered a set of research questions. These research questions took the form of “how” and/or “why”. Yin (2003, p5) suggests that when questions take this form the most appropriate research strategy is the case study – especially if there is no requirement for control of behavioural events and the focus is on contemporary occurrences. In contrast to the modes of co-operation in the print and fish processing sectors that were indicated at initial interviews two development advisors in the bakery sector described rivalrous behaviour among their client firms. The conditions described by these advisors raised another set of questions, again in the form of “how” and “why” and so the decision to conduct a third case study was made.

## 4.6 Why Case Studies?

Yin (2003, p6) notes that when we ask how or why questions we are less concerned with frequencies or incidence and more concerned with 'operational links needing to be traced over time' 'A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident' (Yin, 2003, p13) The case study approach is therefore the most appropriate research strategy where 'contextual conditions' are to be explored and those conditions are pertinent to the phenomenon of study (Yin, 2003 p13)

## 4.7 Case Study Design

Yin (2003 p21) suggests that there are five components of a research design that are especially important a study's questions, its propositions, its units of analysis, the logic linking the data to the propositions, and the criteria for interpreting the findings In formulating a research design for each of the three case studies these components were incorporated

Table 4.3 below shows the research questions for each of the three case studies Yin (2003 p22) suggests however that something more than research questions are required – 'only if you are forced to state some propositions will you move in the right direction' Propositions are an important starting point as they tell the investigator where to look for relevant evidence



**Table 4 3** Research Questions for Case Studies

	<b>Question Form</b>	<b>Research Questions</b>
<b>Case Study 1</b> <i>Fish Processing Sector</i>	How/ Why?	How did a supplier and buyer form a co-operative partnership with one another? How has the buyer firm influenced change within the supplier firm? (Can the buyer be classed as a leader firm?) How and why do co-located competitors co-operate with one another?
<b>Case Study 2</b> <i>Printing Sector</i>	How/ Why?	How did five competing firms collaborate to form a consortium? How has a shared location contributed to the development and operation of the consortium?
<b>Case Study 3</b> <i>Bakery Sector</i>	How/ Why?	Why do firms predominantly operate on a stand-alone basis? Why has co-operation failed to take place?

**Table 4 4** Case Study Propositions

<b>Some Propositions</b>	
<b>Case Study 1</b> <i>Fish Processing Sector</i>	Co-operative partnership is driven by leader firm strategy Co-operation among co-located competitors is attributable to historic and traditional exchanges i.e. “rules of the game” and norms of conducting business
<b>Case Study 2</b> <i>Printing Sector</i>	Market conditions and general industry characteristics are driving factors in the formation of the consortium Trust and inter-personal relationships rather than shared location contributed to development of consortium
<b>Case Study 3</b> <i>Bakery Sector</i>	Intense inter-firm rivalry and distrust have caused firms to act on stand-alone basis and prevented co-operation from taking place i.e. “rules of game” specific to bakery sector

#### 4 7 1 *Unit of Analysis*

For each of the case studies an embedded single case design was formulated. Single case studies are appropriate ‘where the case represents a critical test of theory, where the case is a rare or unique event or where the case serves a revelatory purpose’ (Yin,

2003 p44) All three case studies have a revelatory quality in that they are contributing to new knowledge of real-world industrial activity and inter-firm dynamics. An embedded single case design was favoured over a holistic one as it allows for analysis of more than one unit – it can incorporate a number of subunits that enable a more complex or embedded design to be used. These subunits can often add significant opportunities for extensive analysis, enhancing the insights into the single case (Yin, 2003 p44). Table 4.5 shows the units and subunits of analysis for each of the case studies.

**Table 4.5** Units and Subunits of Analysis

<b>Units and Subunits of Analysis</b>	
<b>Case Study 1</b> <i>Fish Processing Sector</i>	Fish processing sector in North Dublin, relationship between supplier (Oceanpath) and buyer (Superquinn), relationship between co-located competitors, role of supporting organisations
<b>Case Study 2</b> <i>Printing Sector</i>	Printing sector in North Dublin, relationship between five print firms, industry characteristics, market conditions, role of supporting organisations, role of location
<b>Case Study 3</b> <i>Bakery Sector</i>	Bakery sector in North Dublin, the origins of rivalry and distrust, four bakery firms experiences, industry characteristics, role of supporting organisations, role of history and tradition

#### **4.7.2 Linking Data to Propositions and Criteria for Interpreting Findings**

A process of pattern matching was employed in each of the case studies in order to link data to the propositions. Pattern matching is described as a process whereby ‘several pieces of information from the same case may be related to some theoretical proposition’ (Yin, 2003 p26, 116). Theoretical propositions were derived from the literature (as per Chapter 2). The logic of pattern matching is such that a comparison is made between an empirically based pattern and a predicted one. ‘If the patterns coincide, the results help a case study to strengthen its *internal validity*’ (Yin, 2003 p116). The criteria upon which a study’s findings are interpreted are problematic. However, through the use of pattern matching if ‘different patterns are sufficiently

contrasting the findings can be interpreted in terms of comparing at least two rival propositions' (Yin, 2003 p27)

#### **4.8 Data Collection**

Once the case study design had been completed preparations were made for data collection. For each case study individuals were identified within firms and organisations that could best provide data. Contact with these individuals had either already been made during the initial interview stage or was facilitated by development advisors within Enterprise Ireland. Each interviewee was given a brief description of the research and was sent in advance of a face-to-face meeting, a set of interview questions. These interview questions were formulated using the literature as a basis for inquiry (see Appendix C for sets of interview questions)

Interviews are one of the most important sources of case study information as they facilitate the understanding of phenomena and causal processes. Face-to-face interviewing of individuals allows questions to be more open and affords the interviewee an opportunity to elaborate. Personal contact 'maximises trust and co-operation between the interviewer and the interviewee' (Dooley, 2001 p122). It also decreases refusals and permits questioning on more intimate topics (Dooley, 2001 p122)

Although interviews have their strengths as a source of evidence in that they are targeted and insightful (Yin, 2003 p86) they have their weaknesses too. Yin (2003 p86) suggests that they can be subject to bias – from poorly constructed questions or response bias. There can also be inaccuracies due to poor recall. To overcome this particular problem each interview was recorded and later transcribed. In addition to this, handwritten notes were taken during each interview – in case of recording failure.

Other sources of evidence used in the case studies were documentation and direct observation. According to Yin (2003 p86) the strengths of documentation as a source of evidence are its stability – in other words it can be reviewed repeatedly, its unobtrusiveness i.e. it is not created as a result of the case study, and its precision and

the possibility of broad coverage i.e. a long span of time. Direct observations were made possible during visits to the firms and surrounding locations in order to interview individuals. Direct observations are useful in that the investigator is given the opportunity to observe in real time events and contexts (Yin, 2003 p86). In the fish processing case study competitors' premises could be viewed and comparisons made between them and the firm at the centre of the case study – noting their general condition and the surrounding environment within which they operate.

#### **4.8.1 *Triangulation of Data Sources***

Data triangulation encourages 'the collection of information from multiple sources with the aim of corroborating the same fact or phenomenon' (Yin, 2003 p99). This process was adhered to in all three case studies. Evidence gathered was not considered to be fact until it converged or was compatible with evidence from other sources. Data triangulation can address the potential problems of construct validity because 'multiple sources of evidence essentially provide multiple measures of the same phenomenon' (Yin, 2003 p99).

#### **4.9 *Data Analysis***

Data analysis is one of the least developed components of the case study approach. One of the most desirable analytic techniques however, is that of pattern matching. As outlined in Section 4.7.2 pattern matching compares an empirically based pattern with a predicted one or indeed with several alternative predictions (Yin, 2003 p116). Although we stated propositions (see Table 4.4), the case studies were largely exploratory in nature and therefore data was not only linked to these propositions but also to the theories outlined in Chapter 2.

In comparing the empirical data to more than one theory a much more potent analysis could be performed. For example a rival theory to the presence of the clustering is the absence of clustering. In case studies however the best rival theory is not one that simply discounts the target theory. Rival theories were therefore developed. These theories acknowledge that firms may act as stand alone entities, that clustering (in the dynamic sense that involves some kind of inter-firm co-operation) is dependent on a

number of different variables such as industry and market characteristics, historic events, norms and conventions of business. These rival theories probe much deeper than one which simply discounts the target theory entirely.

#### **4.10 Validity and Reliability**

Both the social and physical sciences depend on measuring things that are hard to see (Dooley, 2001 p74). There is therefore a threat of mismeasurement. To judge the quality of measures two dimensions have been suggested: reliability and validity. Reliability 'refers to the degree to which observed scores are free from errors of measurement' while validity refers to the appropriateness, meaningfulness and usefulness of the specific inferences made from the measures' (Dooley, 2001 p76). For case study research Yin (2003 p34) outlines four relevant tests: construct validity, internal validity, external validity and reliability. We elaborate on each below.

##### **4.10.1 Construct Validity**

Construct validity refers to the establishment of correct operational measures for the concepts being studied. To meet the test of construct validity the researcher should specify the subject of study and concepts. The researcher is then required to demonstrate that the measures selected reflect the specific concepts (Yin, 2003 p35).

For each of the case studies the subject was relatively straightforward and therefore construct validity was easily attained. Reliance on existing literature for measures of co-operation, collaboration, dependency, trust and distrust assisted in this process.

Yin suggests that there are some tactics that can be applied to increase construct validity. These include the use of multiple sources of evidence and the establishment of a chain of evidence. As indicated in Section 4.8.1 multiple sources of evidence were used to triangulate data. In addition to this a chain of evidence was established that comprised a number of sections moving from the general research questions at the outset to systematic addressing of various elements of each of the cases.

#### **4 10 2 *Internal Validity***

Internal validity refers to identification of a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships (Yin, 2003 p34) In identifying a causal relationship an investigator may conclude that such a relationship exists between  $x$  and  $y$  The threat to internal validity emerges when this conclusion is reached without having regard to some third factor that may have actually caused  $y$  More broadly, the problem associated with case study research in this context is cause-and-effect inferences Yin (2003 p36) suggests that to overcome this problem some relevant questions ought to be posed e.g. is this inference correct? Is the evidence convergent? Does it appear to be airtight?

Through a process of triangulation it was possible to identify the facts As each interview was conducted more information was acquired This information was then exposed as correct or incorrect through the triangulation process

#### **4 10 2 *External Validity***

External validity is concerned with establishing the domain to which a study's findings can be generalised While surveys rely on statistical generalisation case studies rely on analytical generalisation 'In analytical generalisation the investigator is striving to generalize a particular set of results to some broader theory' Yin, 2003 p37) The domain to which the three case studies herein can be generalised is theories of local economic development and localised inter-firm dynamics including co-operation Generalisation is not automatic however – a theory should be tested by replicating the findings in a second or third local area

#### **4 10 3 *Reliability***

Reliability is concerned with whether or not case study procedures, if repeated, would produce the same results The goal of reliability is to minimise errors and biases in a study Moreover, reliability allows for the case study to be replicated in a different setting

Reliability of the three case studies herein was facilitated by the reliance on interviews using structured questionnaires, which made the data-collection process transparent. In addition to this, reliability was supported by the development of a case study database, as suggested by Yin (2003). Consequently, all interview tapes were kept and filed. Interview transcripts and notes were also filed.

#### **4.11 Summary**

In searching for cluster activity our approach has comprised a number of different stages. Initially a top-down approach using data reduction techniques – specifically location quotients – facilitated the identification of spatially concentrated sectors. This quantitative evidence formed the basis for further qualitative inquiries. A series of interviews were then conducted with experts (i.e. agency development advisors) from a number of different sectors. These semi-structured interviews revealed that co-operation among firms was largely absent but that in two sectors there appeared to be evidence of collaboration. In contrast to this, firms in one sector displayed largely divergent characteristics, namely rivalry and distrust.

A set of research questions, in the form of how and why, led to initiation of a case study strategy. An embedded single case design was formulated for each of the three case studies. This facilitated analysis of more than one unit and allowed for more complex evaluation. Sources of evidence used in the data collection process were interviews, documentation and direct observation. Through the use of multiple sources of evidence it was possible to triangulate the data thereby addressing any problems of construct validity.

A process of pattern matching was employed to analyse the data. This involved comparing empirical data to both the target and rival theories. To avoid the threat of mismeasurement four tests were performed that addressed construct validity, internal validity, external validity and reliability.

## **Chapter 5. Industrial Profile of North Dublin**

### **5.1 Introduction**

This chapter outlines the absolute and relative importance of North Dublin's industrial sectors through the use of employment data (see Section 4.6.2 in Chapter 4 for details of data set). The purpose of this exercise is to identify the industries that form North Dublin's economic base. As indicated in Chapter 4, analysis through the use of location quotients does not necessarily indicate cluster activity, however, it does provide us with evidence of sectoral concentration within the boundaries of the study area. This is a significant starting point in the cluster identification process. Further exploration of these sectors through the use of expert opinion (i.e. obtained through interviews) confirms or discounts the notion of clusters within the local economy and leads to greater in-depth analysis in the form of case studies.

### **5.2 North Dublin's Industry**

Our analysis begins with an examination of employment data at its most aggregated level, both spatially and sectorally i.e. at two-digit NACE code and for all of the 135 distinct electoral divisions (DEDs) that North Dublin encompasses (See Appendix A for the list of DEDs). This highlights the absolute importance of North Dublin's industrial sectors and, through segregation of ownership, the absolute importance of indigenous and foreign owned firms operating within the local economy.

We see from Table 5.1 that the Paper Print and Publishing sector appears to be the most important in terms of indigenous employment with Other Internationally Traded Services, Food, Drink and Tobacco, Financial Services, Electrical and Optical Equipment and Other Manufacturing n.e.c. comprising the other principal sectors. We very clearly see the predominance of the services sectors i.e. both Internationally Traded Services and Financial Services over manufacturing in indigenous industry within North Dublin. This is indicative of trends at national level where 65 per cent of the total workforce are employed in the services sector (IDA, 2004).



**Table 5 1** Full-time Indigenous Employment and Number of Firms by Sector in North Dublin, 2001

Sector	Indigenous full-time Employment	Percentage of Total Indigenous Employment	Number of Indigenous Firms	Percentage of Total No of Indigenous Firms
Agriculture, hunting and forestry	28	0.2%	1	0.2%
Mining and quarrying	2	0.0%	1	0.2%
Food, drink and tobacco	2413	14.8%	74	11.9%
Textiles	187	1.1%	20	3.2%
Clothing and footwear	463	2.8%	27	4.4%
Wood and wood products	213	1.3%	9	1.5%
Paper, printing and publishing	3484	21.3%	71	11.5%
Chemicals	392	2.4%	23	3.7%
Rubber and plastic products	489	3.0%	20	3.2%
Non-metallic mineral products	481	2.9%	16	2.6%
Basic and fabricated metal products	666	4.1%	43	6.9%
Machinery and equipment n e c	415	2.5%	17	2.7%
Electrical and optical equipment	1117	6.8%	31	5.0%
Transport equipment	208	1.3%	13	2.1%
Other manufacturing n e c	822	5.0%	67	10.8%
Financial Services	1973	12.1%	41	6.6%
Other internationally traded services	3005	18.4%	146	23.6%
<b>Total</b>	<b>16,358</b>	<b>100.0%</b>	<b>620</b>	<b>100.0%</b>

Source: Forfas Unpublished Employment Data

**Table 5 2** Full-time Employment and Number of Foreign Owned Firms by Sector in North Dublin, 2001

Sector	Full-Time Employment	Percentage of Total Employment	Number of Firms	Percentage of Total No of Firms
Food, drink and tobacco	3757	13.5%	8	2.3%
Paper, printing and publishing	726	2.6%	6	1.7%
Chemicals	2436	8.8%	22	6.3%
Rubber and plastic products	337	1.2%	3	0.9%
Non-metallic mineral products	361	1.3%	3	0.9%
Basic and fabricated metal products	192	0.7%	3	0.9%
Machinery and equipment n e c	1384	5.0%	1	0.3%
Electrical and optical equipment	3661	13.2%	26	7.5%
Transport equipment	1862	6.7%	4	1.2%
Other manufacturing n e c	7	0.0%	1	0.3%
Financial Services	3972	14.3%	219	63.1%
Other internationally traded services	9104	32.8%	51	14.7%
<b>Total</b>	<b>27,799</b>	<b>100.0%</b>	<b>347</b>	<b>100.0%</b>

Source: Forfas Unpublished Employment Data

Table 5 2 shows that the importance of the services sectors to the North Dublin economy are again reflected in the high employment figures in both Other Internationally Traded Services and Financial Services in foreign owned firms. Employment in foreign owned manufacturing firms is most significant in the Food, Drink and Tobacco and Electrical and Optical Equipment sectors which rank third and

fourth in terms of absolute importance. Among the important differences between foreign owned and indigenous firms in terms of sector significance are, first that while the Chemicals, and Transport Equipment sectors are in the top rankings in terms of percentage of employment in foreign owned firms at 9 and 7 per cent respectively, they are less significant in indigenous employment, each accounting for only 1.3 per cent. Second, while Paper, Printing and Publishing is at the lower end (2.6 per cent of employment) among sectors in foreign owned firms, it is at the top (21 per cent) among sectors in indigenous firms in North Dublin.

It is interesting to note, if we sum the totals in the two tables, that employment in foreign owned firms is greater than that in indigenous firms with the former representing 63 per cent of total North Dublin employment and the latter representing 37 per cent. This may be significant in terms of the type and extent of linkage which can be created within the locality. It can imply that linkages and therefore clusters are not entirely localised entities and that an extension beyond the local scale to the regional, national and even international territorial scales is entirely possible through the presence of a significant number of MNEs within a local place.

Table 5.3 shows the overall industrial profile of North Dublin where employment in foreign owned firms and indigenous firms is combined. The strength of the financial services sector is not surprising given the fact that the International Financial Services Centre is located within the docklands of North Dublin. The Other Internationally Traded Services sector encompasses a number of different business areas which include, among others, software, consultancy, shared services and call centre operations. Strength in the Other Internationally Traded Services sector seems to stem from the presence of overseas companies operating in these areas. According to IDA figures for 2002 North Dublin accommodates 22 per cent of IDA supported software companies, 33 per cent of shared services companies and 32 per cent of call centre companies operating in Ireland (Jones, Interview, 2003). Companies like IBM, Xerox and Hertz have been identified as some of North Dublin's most important companies within these sub-sectors (Agnew, Interview, 2003).

**Table 5 3** Indigenous and Foreign Owned Firms Combined, Full-time Employment and Number of Firms by Sector in North Dublin, 2001

Sector	Full Time Employment No	Percentage of Total Employment	Number of Firms	Percentage of Total No of Firms
Agriculture hunting and forestry	28	0.1%	1	0.1%
Mining and quarrying	2	0.0%	1	0.1%
Food, drink and tobacco	6170	14.0%	82	8.5%
Textiles	187	0.4%	20	2.1%
Clothing and footwear	463	1.1%	27	2.8%
Wood and wood products	213	0.5%	9	0.9%
Paper, printing and publishing	4210	9.5%	77	8.0%
Chemicals	2828	6.4%	45	4.7%
Rubber and plastic products	826	1.9%	23	2.4%
Non-metallic mineral products	842	1.9%	19	2.0%
Basic and fabricated metal products	858	1.9%	46	4.8%
Machinery and equipment n e c	1799	4.1%	18	1.9%
Electrical and optical equipment	4778	10.8%	57	5.9%
Transport equipment	2070	4.7%	17	1.8%
Other manufacturing n e c	829	1.9%	68	7.0%
Financial Services	5945	13.5%	260	26.9%
Other internationally traded services	12109	27.4%	197	20.4%
Total	44157	100.0%	967	100.0%

Source Forfas Unpublished Employment Data

### 5 2 1 Firm Size in North Dublin

Returning to the first two tables (5 1 and 5 2) we see that there are less foreign owned firms than indigenous firms and yet employment in foreign firms far exceeds indigenous employment, foreign owned firms tend to be larger than their Irish counterparts. This is reflected in the wider national economy where 'foreign firms across all sectors tend to be substantially larger than indigenous firms' (Barry et al, 1999). Table 5 4 indicates by sector the average number employed in indigenous firms and foreign owned firms. Indigenous firms in each sector tend to be small or micro sized enterprises while foreign firms tend to be medium to large enterprises. There is a very significant difference in the Food Drink and Tobacco Sector where the average number employed in a foreign firm is 14 times that of the average employed in an indigenous firm. North Dublin accommodates some of the big employers in consumer foods like Tayto and Cadbury and this may help to explain the high average employed in foreign owned firms.

**Table 5 4** Average Firm Size in North Dublin in 2001

Sector	Average No Employed per Indigenous Firm	Classification of Firm Size	Average No Employed per Foreign Owned Firm	Classification of Firm Size
Agriculture, hunting and forestry	28	Small		
Mining and quarrying	2	Micro		
Food, drink and tobacco	33	Small	470	Large
Textiles	9	Micro		
Clothing and footwear	17	Small		
Wood and wood products	24	Small		
Paper, printing and publishing	49	Small	121	Medium
Chemicals	17	Small	111	Medium
Rubber and plastic products	24	Small	112	Medium
Non-metallic mineral products	30	Small	120	Medium
Basic and fabricated metal products	15	Small	64	Medium
Machinery and equipment n e c	24	Small	1,384	Large
Electrical and optical equipment	36	Small	141	Medium
Transport equipment	16	Small	466	Large
Other manufacturing n e c	12	Small	7	Micro
Financial Services	48	Small	18	Small
Other internationally traded services	21	Small	179	Medium

Source: Forfas Unpublished Employment Data

Firm size has been noted because of its significance to the growth and development of clusters. Small to medium sized enterprises (SMEs) have been highlighted in the Italian industrial districts as having the greatest potential for employment growth and have the capability of achieving greater efficiencies and more flexibility than larger enterprises (Sengenberger & Pyke, 1992 p7). Firm size is relevant not just to the Italian industrial districts but also to regional development in Ireland. Morgenroth and O'Malley (2002) suggest a link between SMEs and regional growth and development as smaller firms when examined over a period of time contributed more to employment growth than larger firms. It should be noted, though, that Italian experience is not necessarily the same as Ireland's, and that experience in a particular period in Ireland will not necessarily be the same, in relation to growth of SMEs, as in other periods.

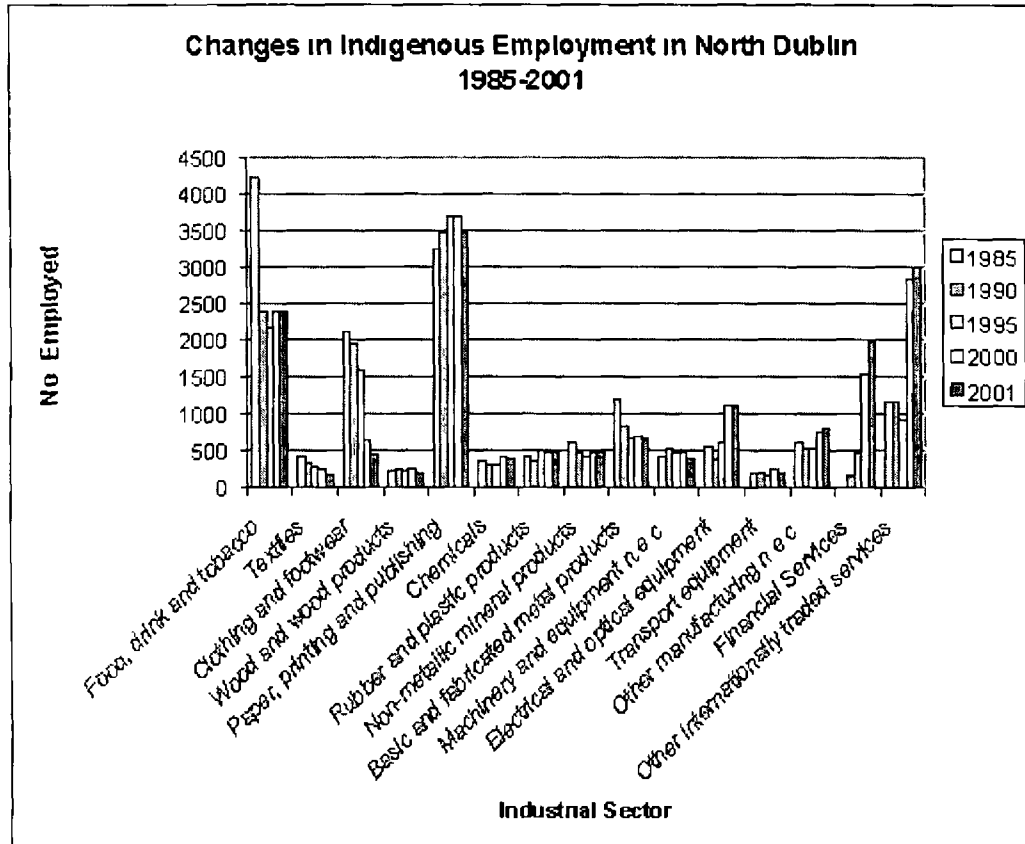
<sup>1</sup> Micro firm employs less than 10 people, Small firm employs between 10 and 49, Medium firm employs between 50 and 249, Large firm employs 250 people and above

### 5.3 Indigenous Employment - Growth and Decline

The above outlines the sectors that are currently important to North Dublin. However, to gain a greater understanding of how these sectors may be performing in terms of employment growth or decline, we need to analyse the changes that have occurred over the past number of years. Figure 5.1 displays the changes in indigenous employment for each of the industrial sectors with the exception of Agriculture, Hunting and Forestry, and Mining and Quarrying. These sectors have been omitted because of the small number of firms and the low levels of employment. The trends very quickly emerge with the aid of visual representation. We see that both Other Internationally Traded Services and Financial Services have been growing steadily since 1985 and have in the eleven-year period between 1990 and 2001 experienced growth in employment of 280 per cent and 726 per cent respectively. The Food, Drink and Tobacco Sector which we have highlighted as being important to North Dublin was in fact of far greater importance in 1985 when it employed almost double what it employs today. Paper, Printing and Publishing, on the other hand, has been since 1990, and remains, the top employing sector among indigenous firms.

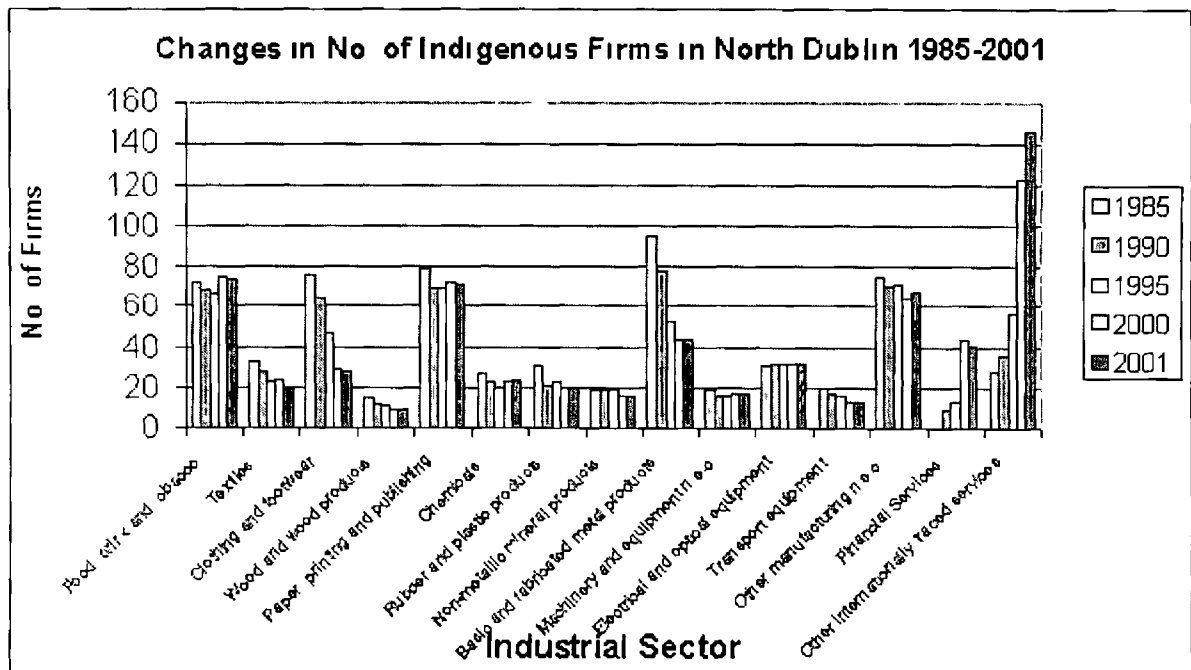
Despite the overall decline between 1985 and 2001, continued growth has been experienced since 1995 which would suggest a recovery for indigenous firm sectors. It is interesting to note that the more traditional sectors like Clothing and Footwear and Textiles have experienced a steady decline since 1985 with more 'new economy' sectors like Electrical and Optical Equipment experiencing steady growth since 1990. Our concern with the growth and decline of employment is linked to the potential for cluster development. Sectors that experience, not just a growth in the employment but also growth in number of firms, are more prone to cluster formation. We turn now, therefore, to the rise and fall in firm numbers.

**Figure 5 1** Changes in Indigenous Employment 1985-2001



Source: Analysis of Forfas Unpublished Employment Data

**Figure 5 2** Changes in Number of Indigenous Firms in North Dublin 1985-2001



Source: Analysis of Forfas Unpublished Employment Data

### **5 3 1 *Numbers of Indigenous Firms***

Sectors that have experienced growth in employment seem to have experienced growth in the number of firms. Take for instance the Food Drink and Tobacco sector - employment in this sector has been on the increase since 1995 and we see from figure 5 2 that this has been accompanied by a rise in the number of firms. Confirming the decline of the more traditional sectors, Textiles and Clothing and Footwear, is the sharp decline in these sectors' firm numbers. The number of indigenous Textile firms has fallen from 33 in 1985 to 20 in 2001 while the number of indigenous Clothing and Footwear firms has fallen from 76 in 1985 to 27 in 2001. These signify an overall sectoral decline in North Dublin.

It is interesting to note that the employment growth experienced in Paper Print and Publishing has not been accompanied by a growth in firm numbers. This may be due to a decline of specific sub-sectors within the sector itself, and/or to an increase in employment in some of the firms. An increase in the size of firms is certainly the explanation for the more than doubling of employment in the Electrical and Optical Equipment sector since 1990, with a more or less stable number of firms.

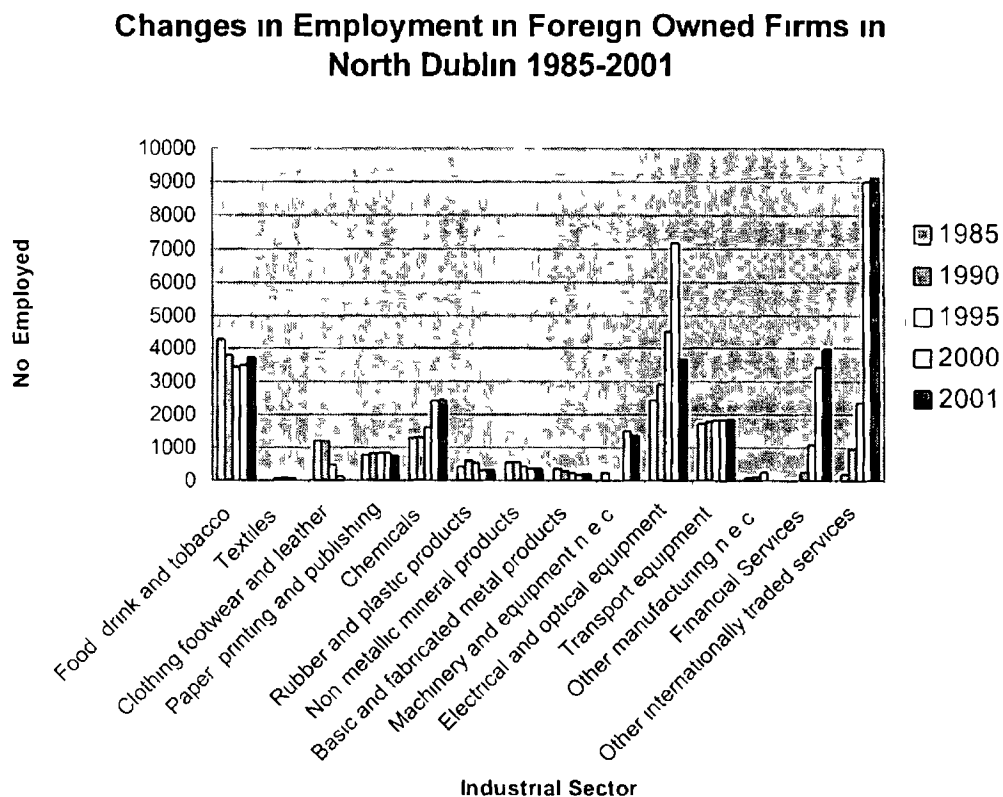
Both the Other Internationally Traded Services and Financial Services sectors have experienced growth in number of firms overall since 1985 although Financial Services did experience a slight drop between 2000 and 2001. The growth in firm numbers re-affirms the importance of these sectors to the local economy.

### **5 3 2 *Employment in Foreign Firms - Growth and Decline***

Trends in employment in foreign owned firms are to a certain extent similar to those experienced in indigenous firms although on a greater scale. The growth of Other Internationally Traded Services and Financial Services can be attributed to IDA policy which has endeavoured to attract overseas firms within these sectors into Ireland over the past ten to 15 years. Growth is expected to continue as IDA continues to actively pursue a policy of maintaining and attracting these types of companies into the mid-east region.

Despite the considerable growth experienced in some sectors there has been a sharp decline in employment in foreign owned Electrical and Optical Equipment firms between the years 2000 and 2001. This, we believe, is due to significant closures that occurred in the electronics sector in North County Dublin i.e. the closure of firms such as Amdahl, Motorola, and Gateway. The ability of North Dublin to sustain current employment levels in this sector is seriously jeopardised by the lure of low-wage Eastern European locations such as Hungary and the Czech Republic<sup>2</sup>. An examination therefore of the pattern of development in indigenous sectors (as presented in the three case studies, chapters 7 to 9) is made all the more pertinent in this context.

**Figure 5.3** Changes in Employment in Foreign Owned Firms in North Dublin 1985-2001



Source: Analysis of Forfas Unpublished Employment Data

<sup>2</sup> On the shift of elements of the computer industry from Ireland and Scotland to Eastern Europe see Van Egaraat and Jacobson (2004)

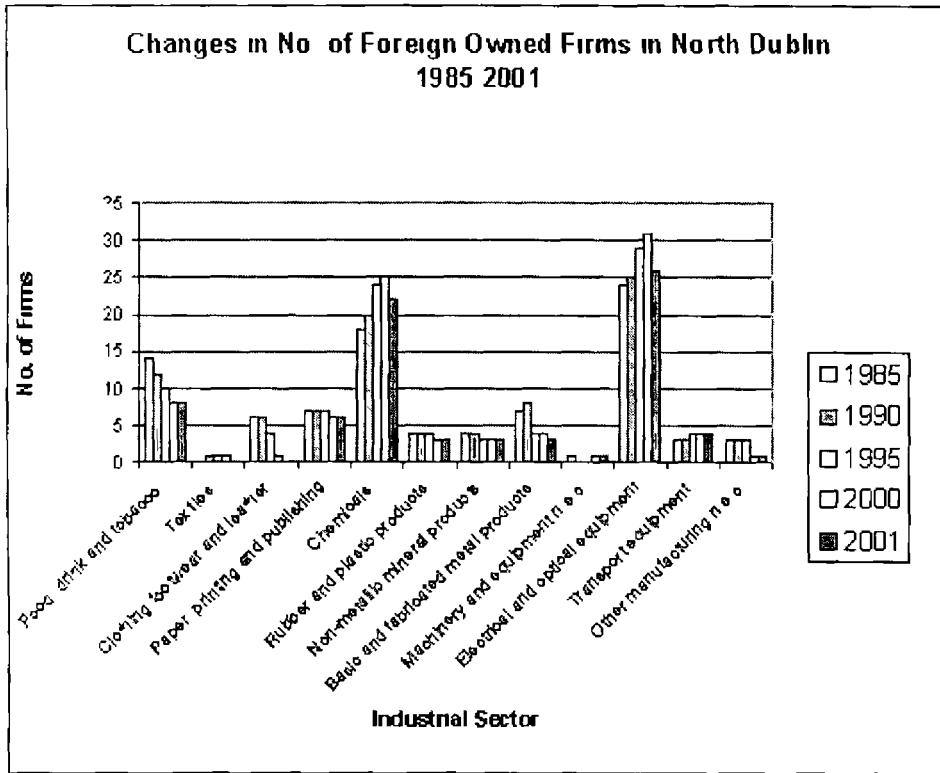


Employment in foreign owned firms has been maintained at quite significant levels over the 16-year period between 1985 and 2001. The importance therefore of inward foreign direct investment (FDI) to the local economy of North Dublin cannot be overstated. FDI is even more significant in North Dublin than at the national level.

### **5.3.3 *Numbers of Foreign Owned Firms***

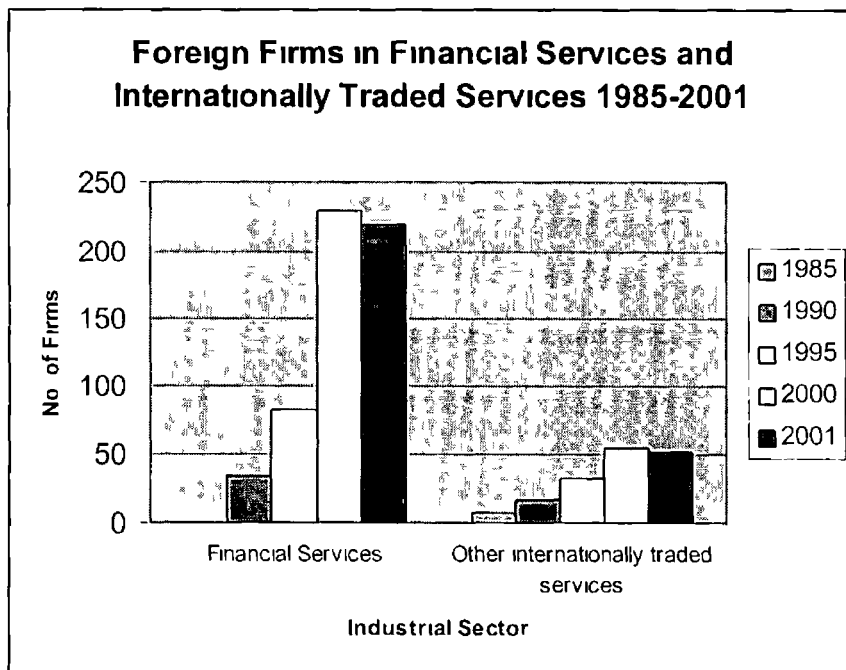
As indicated above there are less foreign owned firms in North Dublin than indigenous firms with the exception of the Financial Services sector where there are 15 times more foreign than indigenous firms. As we have previously indicated this is attributable to the presence of the IFSC within North Dublin. Figure 5.4 shows the changes in foreign owned firms for all sectors except the Financial Services and Other Internationally Traded Services sectors that are displayed in Figure 5.5. The overall trend for sectors displayed in Figure 5.4 is one of decline. Firm numbers are decreasing. These are not the types of trends we would envisage in a growing cluster. Having said that, the declining numbers of firms may be consistent with the growth of individual firms and/or of numbers of firms in specific sub-sectors within these sectors, and therefore with sub-sector clustering.

**Figure 5 4** Changes in Number of Foreign Owned Firms in North Dublin 1985-2001



Source: Forfas Unpublished Employment Data

**Figure 5 5** Changes in the Number of Foreign Firms in Financial Services and Internationally Traded Services 1985-2001



Source: Forfas Unpublished Employment Data

## **5.4 First Scan of Local Economy**

The above gives an initial indication of North Dublin's economic base. As it represents the most aggregated level of analysis it simply highlights the nature of employment within the local economy and the strength of broad industrial sectors within the confines of a pre-defined geographical space. While useful, the data tells us very little about specific sub-sectors and even less about how concentrated these sectors actually are. Fundamental to the cluster concept is the depth of geographical concentration of firms in similar or related industries or sectors (Rosenfeld, 1995 p. 5). It is therefore apparent that more disaggregated analysis is required, analysis that takes into account not only the absolute importance of industrial sectors to the local economy but also their relative importance in the national economy. This will enable us to highlight any relative and therefore significant sectoral concentrations.

In moving from a preliminary scan of the local economy to a more detailed one we can bear in mind the sectors we have highlighted as being important to North Dublin. To summarise, important sectors are those that have made a sustained contribution to employment over a period of time or where significant growth in jobs has been experienced. This also includes sectors where a significant number of firms have been maintained in the locality or where growth in the number of firms warrants our attention. These sectors are as follows: Food, Drink and Tobacco, Other Internationally Traded Services, Financial Services, Paper, Print and Publishing and Electrical and Optical Equipment.

### **5.4.1 Concentrations of Sectors**

Before we proceed to the second, more detailed scan of the local economy we need to put North Dublin's sectoral profile in context. Although still at the most aggregated level of analysis there is a distinct need to display the relative importance of sectors and the extent to which they represent spatial concentrations in North Dublin. Through use of location quotients we can indicate the measure of spatial concentration based upon employment data thereby enabling us to highlight the sectors that have potential for cluster activity. Both the location quotient and the number of firms in each sector act as our indicators of spatial concentration. Tables

5.5 to 5.7 display only those sectors which have three or more firms and a location quotient (LQ) above one. Again, the distinction has been made between indigenous and foreign owned industry.

**Table 5.5** Indigenous Sectors with High Concentrations as Measured by the Location Quotient in North Dublin

Sector (Indigenous Firms)	Location Quotient*	Number of Firms
Clothing, Footwear and Leather	1.18	27
Paper, Printing and Publishing	2.72	71
Electrical and optical Equipment	1.03	31
Financial Services	5.87	41

Source: Calculations based on Forfas Unpublished Employment Data 2001

**Table 5.6** Foreign Owned Sectors with High Concentrations as Measured by the Location Quotient in North Dublin

Sector (Foreign Owned Firms)	Location Quotient	Number of Firms
Food Drink and Tobacco	1.63	8
Paper, Printing and Publishing	2.75	6
Transport Equipment	1.08	4
Financial Services	3.09	219
Other Internationally Traded Services	1.39	51

Source: Calculations based on Forfas Unpublished Employment Data 2001

**Table 5.7** Sectors (Foreign and Indigenous Firms combined) with High Concentrations as Measured by the Location Quotient in North Dublin

Sector (Indigenous & Foreign Owned Firms)	Location Quotient	Number of Firms
Paper Print and Publishing	2.16	77
Transport Equipment	1.19	17
Financial Services	4.04	260
Internationally Traded Services	1.33	197

Source: Calculations based on Forfas Unpublished Employment Data 2001

We see from these tables that there are just a small number of sectors which display a spatial concentration in North Dublin. We are not surprised by the significant concentration in the Financial Services and Other Internationally Traded Services

sectors because of the IFSC and because of the fact that service companies are attracted to urban agglomerations where they can avail of large pools of skilled labour. Surprisingly, the Food, Drink and Tobacco sector which we highlighted as being important to North Dublin does not represent a spatial concentration and the Clothing, Footwear and Leather sector which we highlighted as a sector in decline does constitute a spatial concentration. We are somewhat sceptical that this declining sector can be part of a cluster because both employment and firm numbers have been falling since 1985. However, it is possible that sub-sectors within this sector are growing. It is also possible that the sector is a cluster in decline.

## **5.5 Second Scan of Local Economy**

The above, while useful, provides too general a picture of sectoral concentration in North Dublin. It may be that a sector in its entirety does not display a significant concentration but one or even a number of its sub-sectors may display a considerable concentration. For this reason, it is essential to look further and deeper at sectoral employment. To do this, analysis at four digit-NACE code level needs to be performed. Again, we have regard to the number of firms and the location quotient calculated.

### **5.5.1 Sub-Sectoral Spatial Concentrations in North Dublin**

A location quotient was calculated for all of North Dublin's sub-sectors and not just for those sectors that displayed a spatial concentration at two-digit NACE code level. Analysis was conducted in this way so as not to limit or apply any unnecessary constraints to the scan of the local economy. Some cluster studies are conducted in a manner that results in certain sectors being largely ignored or omitted because of the particular motives and policy interests that drive the nature of inquiries. These tend to be based on 'political concerns or pre-determined policy options rather than established theoretical models' (Bergman and Feser, 1999). Tables 5.8 to 5.10 below display all sub-sectors that have three or more firms and a location quotient above one. Again distinction has been made between employment in indigenous and foreign owned firms.

Our decision to scan all sub-sectors and not just those that displayed concentration at the two-digit NACE level proved worthwhile. Our first scan of the indigenous Food, Drink and Tobacco sector suggested that it was not in any way concentrated in North Dublin. However, as can be seen from Table 5.8, five (out of nine) of the sub-sectors in Food, Drink and Tobacco display considerable concentrations in North Dublin.

These results should however, be treated with some caution, as the overall importance of the sectors in absolute terms needs to be taken into account. In other words we should have regard to the sector's share of total regional or local employment. The Non-Metallic Mineral Products sector for example displays a spatial concentration in North Dublin although employment in the sector only accounts for 2.9 per cent of the area's total employment. The scale of activity may be an important consideration as there needs to be both sufficient employment and number of firms present in a locality in order for there to be potential or scope for cluster activity. The same can be said of the indigenous Textiles and Clothing and Footwear sectors as these account for only 1.1 per cent and 2.8 per cent respectively of North Dublin employment and are ranked 15<sup>th</sup> and 10<sup>th</sup> in order of importance to the local economy (in employment terms).

The relatively small contribution that these sectors make to indigenous employment is not a sufficient reason to discount their spatial concentration but it is when coupled with the fact that these sectors have been in decline since 1985. We therefore need to have regard not only to the overall importance (rank) and contribution to total regional employment but also to the patterns of growth or decline experienced over a period of time. With these factors in mind we can begin to highlight the sectors which may, pending further investigation, be classified as clusters.

We begin this process by examining the indigenous sub-sectors displayed in Table 5.8. The Food, Drink and Tobacco sector has the potential for cluster activity and is worthy of further investigation for a number of reasons. The first is that a number of its sub-sectors represent spatial concentrations in North Dublin, the second is that the sector appears to have been growing (in terms of employment see Table 5.1) since 1995 and third, firm numbers appear also to have been growing since 1985 (see Table 5.2). The fourth and final reason relates to the fact that the sector is ranked third in absolute importance and accounts for 14.8 per cent of total indigenous North Dublin

employment. We have already outlined above the reasons why the Textiles, Clothing and Footwear and Non-Metallic Mineral Product sectors are unlikely candidates for cluster activity.

**Table 5 8** Indigenous Sub-sectors with High Concentrations as Measured by the Location Quotient in North Dublin

NACE Code	Description	Location Quotient	Number of Firms
<b>Food Drink and Tobacco</b>			
1500	Manufacture of food products and beverages	1 05	7
1520	Processing and preserving of fish and fish products	1 50	12
1561	Manufacture of grain mill products	2 25	5
1581	Manufacture of bread, manufacture of fresh pastry goods and cakes	1 33	9
1589	Manufacture of other food products n e c	1 39	15
<b>Textiles</b>			
1772	Manufacture of knitted and crocheted pullovers, cardigans and similar articles	1 11	5
<b>Clothing and Footwear</b>			
1820	Manufacture of other wearing apparel & accessories	1 29	14
1822	Manufacture of other outerwear	1 63	4
1824	Manufacture of other wearing apparel & accessories n e c	1 10	4
<b>Non-Metallic Mineral Products</b>			
2640	Manufacture of bricks, tiles and construction in baked clay	1 43	4
2661	Manufacture of concrete products for construction purposes	1 26	7
<b>Paper Print and Publishing</b>			
2112	Manufacture of paper and paperboard	2 28	7
2121	Manufacture of corrugated paper and paperboard and containers of paperboard	3 46	7
2123	Manufacture of paper stationery	5 03	6
2222	Printing n e c	3 08	34
2224	Composition and plate making	6 77	3
2225	Other activities related to printing	3 96	4
<b>Chemicals</b>			
2430	Manufacture of paints, varnishes	3 11	4
<b>Rubber and Plastic Products</b>			
2524	Manufacture of other plastic products	1 12	15
<b>Electrical and Optical Equipment</b>			
3002	Manufacture of computers & other information processing equipment	2 05	6
3110	Manufacture of electric motor generators and transformers	3 54	3
3162	Manufacture of other electrical equipment	1 13	3
<b>Transport Equipment</b>			
3530	Manufacture of aircraft and spacecraft	8 26	3
<b>Financial Services*</b>			
		5 87	41
<b>Other Internationally Traded Services*</b>			
		1 04	146

Source: Calculations based on Forfas Unpublished Employment Data 2001

\*Unable to obtain greater disaggregation for Financial Services and Internationally Traded Services Sectors



The Paper Print and Publishing sector is ranked first in absolute importance and accounts for 21.3 per cent of total indigenous North Dublin employment. Its sub-sectors display very high concentrations although both the number of firms and employment in those firms fell between 2000 and 2001. Despite this slight sectoral downturn the overall rank and the high levels of concentration in North Dublin suggest that it is a sector with existing – or great potential for – cluster formation.

The remaining sectors and sub-sectors displayed in Table 5.8 – Chemicals, Rubber and Plastic Products, Electrical and Optical Equipment, Transport Equipment, Financial Services and Other Internationally Traded Services all display varying degrees of spatial concentration in North Dublin. The scale of employment in the Chemicals and Rubber and Plastic Products sectors (see Table 5.1) suggest that other sectors like Financial Services and Other Internationally Traded Services (which collectively account for 30.4 per cent of total indigenous North Dublin employment) should, for reasons of scale, take priority in terms of further investigation. The transport Equipment sector, although ranked 14<sup>th</sup> in terms of importance to indigenous employment does display quite a significant spatial concentration in North Dublin and when combined with employment in foreign owned firms the overall rank moves from 14<sup>th</sup> to 7<sup>th</sup>. We suggest that such a concentration should not be ignored.

It may seem surprising that Financial Services and Other Internationally Traded Services are the only two sectors in foreign owned industry to display a spatial concentration within North Dublin given the fact that other sectors have been highlighted at the two-digit NACE code level. However, the reason for lack of sectoral and spatial concentrations pertains to the low number of firms in each sub-sector and not to low levels of location quotient. A number of the sub-sectors could not be classed as spatial concentrations simply because employment was concentrated in just one or two firms which gives little scope for firm interaction and thus little scope for cluster formation.

**Table 5 9** Foreign Owned Sub-sectors with High Concentrations as Measured by the Location Quotient in North Dublin

Description	Location Quotient	Number of Firms
<b>Financial Services</b>	3.09	219
<b>Internationally Traded Services</b>	1.39	51

Source: Calculations based on Forfas Unpublished Employment Data 2001

Table 5 10 displays all of North Dublin's spatial concentrations (when indigenous employment and employment in foreign owned firms are combined) For the purposes of cluster identification however, we have used tables 5 8 and 5 9 so as to differentiate between indigenous and foreign owned industry

**Table 5 10** Sub-Sectors (Indigenous and Foreign Owned) with High Concentrations as Measured by the Location Quotient in North Dublin

NACE Code	Description	Location Quotient	Number of Firms
<b>Food Drink and Tobacco</b>			
1533	Processing and preserving of fruit and vegetables	1.65	6
1561	Manufacture of grain mill products	1.66	5
<b>Paper Print and Publishing</b>			
2112	Manufacture of paper and paperboard	1.78	8
2121	Manufacture of corrugated paper and paperboard and containers of paperboard	3.00	8
2123	Manufacture of paper stationery	3.11	7
2222	Printing n e c	2.38	36
2224	Composition and Plate Making	5.00	3
2225	Other activities related to printing	2.94	4
<b>Chemicals</b>			
2430	Manufacture of paints, varnishes	2.67	6
2466	Manufacture of other plastic products	1.12	8
<b>Machinery and Equipment n e c</b>			
2924	Manufacture of other general purpose machinery n e c	2.27	6
<b>Electrical and Optical Equipment</b>			
3220	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy	1.23	3
<b>Transport Equipment</b>			
3530	Manufacture of aircraft and spacecraft	2.75	5
<b>Manufacturing n e c</b>			
3630	Manufacture of musical instruments	1.67	3
<b>Financial Services</b>			
		4.04	260
<b>Internationally Traded Services</b>			
		1.33	197

Source: Calculations based on Forfas Unpublished Employment Data 2001

## **5.6 Location of Spatial Concentrations within North Dublin**

We are aware that 'industrial clusters may manifest themselves at different spatial scales' (Bergman and Feser, 1999) i.e. at international, national, regional and local territorial levels. North Dublin can be classed as a local area and as such firms located within North Dublin are geographically proximate to one another. However, there are specific districts within North Dublin where similar or related firms concentrate their activity, the IFSC in Dublin's north docklands being the most obvious example.

Other obvious concentrations include firms in Paper Print and Publishing which are concentrated in Glasnevin, Finglas and Swords, firms in Other Internationally Traded Services which are concentrated in Blanchardstown, Eastpoint and the city centre, and firms in Fish Processing and Production which are concentrated in Howth.

## **5.7 The Next Step**

Despite having identified a considerable number of spatially concentrated sub-sectors it was not feasible to perform qualitative investigations on all of them. As indicated in Chapter 4 we were able to reduce the number of sub-sectors worthy of investigation by matching our concentrated sectors with what the development agencies considered their key or very active client firms. From the information gathered during the initial set of interviews with development advisors it emerged that elements of cluster activity – specifically forms of co-operation – were present in two sectors: fish processing and printing. In contrast to these, a distinct lack of co-operation was revealed in the bakery sector and the decision was taken to highlight modes of development in these sectors over others. We outline and elaborate on our reasons for this in Chapter 6 referring to our qualitative investigations that were conducted on a number of sectors other than those which are the focus of the three case studies.

Despite the fact that it is not possible within the confines of this dissertation to analyse and discuss all of the concentrations revealed in this chapter the findings are still none the less very valuable. They provide, for example, a significant starting

point for any future research that may be conducted on local industry development within North Dublin

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## Chapter 6: Introduction to Case Studies

### 6.1 The Need for Case Studies

In Chapter 5 we identified a number of spatially concentrated sectors in North Dublin. It was decided, through interviews with experts (i.e. development advisors in the development agencies), that some sectors<sup>1</sup> (and a specific set of firms within each sector) should be investigated further so as to either eliminate them as clusters or identify them as having elements of cluster activity (See Sections 4.5.4 to 4.5.7 in Chapter 4 for the methodology used.) Initial interviews revealed little evidence of co-operation among firms. Furthermore, the dynamic between and among firms in two sectors – financial services and internationally traded services – could not be related to the cluster literature in general because of the focus in the literature on manufacturing over services inter-firm relationships. We acknowledge that the analysis of inter-firm relationships in services sectors would contribute a great deal to the literature, however, given the parameters of the study it was not possible to explore them in this work.

Despite the lack of widespread co-operation among firms it emerged that elements of cluster activity were present in two sectors: fish processing and printing. In contrast to these, a distinct lack of co-operation was revealed in the bakery sector and the decision was taken to highlight modes of development in these sectors by undertaking a number of case studies (see Sections 4.6 to 4.9 in Chapter 4 as to how and why they were conducted). These sectors were chosen over others because (in the case of fish processing and printing) they exhibited elements of co-operation in both sectoral and locational terms. Despite the fact that initial qualitative investigations revealed a dearth of co-operative processes in a number of sectors (other than bakery) the reasons for focusing on the lack of co-operation in the bakery sector stem from our

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<sup>1</sup> Initial qualitative investigations were conducted on the following sectors: financial services, internationally traded services, electronics/aerospace, fish processing, printing, and bakery.

hypothesis<sup>2</sup> that an industry set of values (e.g. secrecy and rivalry) can be responsible for the predominance of firms to act as stand-alone entities (see Section 9.2 in Chapter 9 for further discussion). There was some initial evidence that this may be the case among bakeries and it was decided to focus on this sector to examine these relationships in more detail.

Furthermore, these three sectors lend themselves to inter-industry, comparative analysis due to the fact that they have in common with one another some important characteristics. All three sectors are classified as traditional and in mature stages of their respective industry life cycles. All three sectors, to varying degrees, display spatial concentration in North Dublin. In terms of firm type, these sectors comprise predominantly small to medium sized indigenous firms (Section 10.2.1 in Chapter 10 outlines the common features).

It emerged also from the initial qualitative investigations that little was known about actually existing relationships between firms with the exception of research conducted on the furniture industrial district in Monaghan by Mottiar & Jacobson (2002) and Jacobson *et al* (2001). Industrial clustering is largely understood (by the development advisors interviewed) to mean geographical concentrations of firms in the same sector or indeed “winning” industries (e.g. high tech or science based industries like pharmaceuticals or ICTs whose contribution to the national economy is thought to be great and whose development takes priority over more traditional, mature sectors) with little heed to any formal or informal links that firms may have with the local, regional or national economy. A study of actually existing relationships serves to highlight the extent to which firms inter-depend on one another for, among other things, survival, development and innovation, (e.g. in the fish processing and printing case studies).

Another motivating factor in pursuing a case study approach stems from the work of Cooke (1998) who suggested that features of industrial districts such as modes of networking could provide a route to cluster development in Ireland. An examination

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<sup>2</sup> This hypothesis was formulated on the basis of data gathered at interview with development advisors. Both advisors outlined how extreme inter-organisational rivalry and secrecy formed an obstacle to co-operation.

and analysis of inter-firm relationships is essential therefore, in the formation of any long-term policy planning in relation to the development of clusters. The three case studies which follow represent the “first steps” in such a process.

For a summary and description of each of the case study chapters see Section 1.4 in Chapter 1.

## **6.2 The Role of Location Quotients (LQs) in Case Study Selection**

As indicated above the case study selection process was based on initial evidence (qualitative) of co-operation (in the case of the fish processing and printing sectors) and an absence of co-operation (in the case of the bakery sector). All of these sectors display varying degrees of spatial concentration as measured by the location quotient (See Chapter 5). It was this quantitative evidence that led to initial qualitative investigations (i.e. interviews with development advisors in the development agencies). The calculation of LQs provided *prima facie* evidence of clustering and allowed for exploration of the relationship between groups of spatially concentrated firms and levels or types of co-operation/ non-co-operation.

## **6.3 Use of Triangulation in Case Studies**

In Section 4.8.1 (Chapter 4) we discussed how data triangulation addresses the potential problem of construct validity by gathering evidence from a number of different sources. For each of the case studies this process was adhered to. In the fish processing case study this involved interviews not only with personnel in the leader firm (Superquinn) and its supplier (Oceanpath) but with personnel in BIM (The Irish Fisheries Board) and Enterprise Ireland that had knowledge of each of the firms' operations. In addition, industry documents and journals were studied so as to establish the data gathered as fact. Similarly, in the printing case study interviews were conducted with development advisors in Enterprise Ireland on two separate occasions and with the managing director of the consortium at the centre of the case study. In addition to this, several industry documents, reports, and journals were reviewed for the purpose of corroborating the facts (references to which are contained in the relevant case study chapter). In the bakery case study interviews were conducted with personnel in four North Dublin bakery firms, with a representative from the industry's supporting organisation and with two development advisors in

Enterprise Ireland Various industry reports were also used in the evidence gathering process. Again, evidence from one source was not considered fact unless it was compatible with evidence from the other sources.



## Chapter 7: Inter-firm Relationships in the Fish Processing Sector

### 7.1 Introduction

This chapter is primarily concerned with the evolution of a leader firm-supplier relationship, namely that between a retail buyer and a fish processing supplier in the spatially concentrated sub-sector of processing and preserving of fish and fish products (NACE 1520) in Howth, North County Dublin. However, the nature of other relationships, both vertical and horizontal, between local and non-local firms including non-firm organisations such as trade associations, is also subject to examination. A distinction is made between relationships co-ordinated on an organic basis i.e. through social trust and norms of economic behaviour and more consciously co-ordinated mechanisms such as dyadic trust between a leader firm and its supplier. We will show that the former is a powerful force in the creation of a co-operatively competitive environment in which commercial information is shared but that relationships that are subject to more consciously co-ordinated mechanisms, yet still classed as *social networks*, facilitate the sharing of technical information that ultimately results in innovation.

### 7.2 Chapter Layout

The chapter begins with a discussion of the analytical considerations and the appropriateness of particular literatures. Focusing on the importance of co-operation (as discussed in Sections 2.4.1 to 2.4.2 in Chapter 2) we elaborate on the types of co-ordination mechanisms i.e. organic and co-ordinated interaction that underlie various co-operative forms. Empirical data is then presented and related to the literature.

### 7.3 Analytical Considerations

For analysis of case study evidence a framework is required which, at its centre, examines the importance of location (as the case study refers to a concentration of firms in a particular place), provides a rationale for various inter-organisational relationships within that location (as the case study deals with a number of vertical and horizontal relationships) and an indication of the co-ordinating mechanisms underpinning those relationships. The framework needs also to shed light on the internal organisation of firms and account for how firms learn and innovate (as the case study explores the changes and improvements made to organisation and production in one firm (supplier) as a direct result of its relationship with another firm (buyer)). A framework based on the industrial district literature fulfils all of the above criteria.

More general cluster literature, in particular the work of Porter (1990, 1998) is not entirely applicable to the case study, for a number of reasons. The first is that Porter is concerned with how industries (rather than firms within industries or sectors) interact with one another and how those interactions comprise a system of national advantage. The case study herein is not concerned with how industries relate to one another but is concerned rather with relationships between different organisational actors (firms, supporting organisations) within one industry in particular. The second reason relates to the types of relationships that are at the centre of Porter's concept/theory (and which are identified through the use of input/output tables), namely market relationships (this was discussed in Section 2.2 in Chapter 2). There are clear conceptual differences between what is central to Porterian clusters and what is of central exploration here.

One might argue that similarly there is a mismatch between the subject of this case study and what has been presented in the industrial district literature, in other words that the latter is an equally inappropriate concept on which to build/model an analytical framework for the case in hand. At the centre of our case study is a spatial concentration of firms engaged in the production and processing of fish, suppliers of inputs to those firms and buyers who retail the produce (though not all of the actors are located in North Dublin). Together they form a supply chain. Brown and Hendry

(1997/1998), in distinguishing between industrial districts and supply chains, state that in the latter the relationship is vertical and involves an exchange of goods and services. This relationship also exists in the former but with a number of additional characteristics, namely a shared geographic locality where 'independent firms operating in the same or related market segment' benefit from external economies of scale and scope from agglomeration (Brown and Hendry, 1997/1998)

Industrial districts have long been associated with 'the network type of co-ordination of economic relations' that is based on 'horizontal trust based relations amongst local firms and between firms and institutions' (Boschma and Lambooy, 2002). The above forms of industrial network are however changing and evolving and are subject to more broadly defined characteristics. 'Supply chains have themselves been undergoing change, with more of an emphasis on a partnership, or relationship orientation' (Brown and Hendry, 1997/1998). Similarly, industrial districts are neither homogenous nor static entities and they too, have been undergoing change. Rather than a deepening of spontaneous co-operation and co-ordination of production the industrial districts (as highlighted in Sections 2.10.2 and 2.10.3 in Chapter 2) have seen the emergence of a dominant player or players (a single leader firm or a group of firms) that is radically changing the dynamic of the district's inter-organisational relationships and in particular power relationships (Lazerson and Lorenzoni, 1999, Carbonara 2002, Harrison, 1994, Coro and Grandinetti, 2001, Dei Ottati, 1996, Panizza, 1998). This is discussed further in Sections 7.4.1 to 7.6 below.

It follows that industrial districts are open to a much wider interpretation than previously thought. Panizza (1998) suggests that there are just two factors that underpin the various forms of organisation found in industrial districts:

'Behind the so lightly used term 'industrial district' many different forms of organization of labour and many different socio-cultural fabrics are hidden. In what may be regarded as a common definition, industrial districts are taken as forms of organization governed by trust and co-operation.'

Although the case study is centred on a supply chain the key factors which underpin relationships in industrial districts (according to Paniccia, 1998) are, *prima facie*, the same factors underpinning inter-organisational relationships amongst firms and between firms and supporting organisations in the fish processing sector in North Dublin, namely trust and co-operation. The industrial district literature and the theories upon which the concept is based thus provide an appropriate framework to investigate inter-firm relationships in the fish-processing sector in North Dublin.

What can the regional systems of innovation literature bring to an investigation that the industrial district literature cannot? We know that in industrial districts the co-operation and trusting relations between actors mean that new knowledge is diffused easily and so firms learn through interaction with one another. As indicated in Section 2.9 of Chapter 2, regional systems of innovation are localised systems where the 'economic performance of a region does not depend solely on the individual company performance but rather on the way in which companies interact with one another and the public in the creation and dissemination of knowledge' (Fischer, 2001). The outcome of interaction between actors in such a system is innovative behaviour. The regional systems of innovation concept is an umbrella concept in that it encompasses a number of different elements or units that constitute a system. At its core lies the premise that knowledge is key to the innovation process and in order for a firm to convert knowledge into an economic gain (either through organisational or process improvement or new product or process development) they must become a learning firm (either by doing, using or interacting (Koschatsky, 1999)). How organisations learn therefore, is one unit that comprises the system and so organisational learning literature becomes a constituent part in analysis of inter-firm relationships in a system of innovation. A successful regional system of innovation is a 'learning region' made up of learning organisations.

The focus of this chapter is not a system of innovation but, as with the industrial district concept, there are elements of our case study that can be explained with reference to the regional system of innovation literature. Innovation is usually associated with R&D firms, large multi-national type enterprises and more recently high-tech or science based industrial sectors. However, innovative activities, as Blumentritt (2004) reminds us, are not just about the development of new products or

services. Firms, he suggests, can be innovative in many ways for example by creating new or improving support services, improving the efficiency and effectiveness of internal processes and discovering new ways of establishing and maintaining relationships with customers.

Using Bender and Laestadius's (2005) "innovation enabling capabilities" approach we examine Oceanpath's (fish processor and supplier) innovativeness in terms of its *transformative* capabilities and *configurational* capabilities. Sections 7.10.3 and 7.12.3 below explain these terms and discuss them with reference to the empirical data.

### **7.3.1 From Market Transaction to Co-ordination Integration**

At one end of the spectrum lies the market transaction, at its other extreme lies integration (either vertical or horizontal). However integration need not imply ownership. It can include another dimension which Langlois and Robertson (1995, p10-11) term co-ordination integration which may involve, for example, 'two distinct legal entities engaged in an ongoing development project that involves exclusive dealing, significant exchange of information and administrative coordination'. In a general sense it refers to various co-operative exchanges between autonomous economic actors. Central to our study of the evolution of inter-firm relationships in the fish-processing sector is the following question:

*How do transactions evolve from purely market-based exchanges to more organised, structured and partnership-type arrangements that have implications for firms boundaries and ultimately result in those boundaries being blurred?*

It should be noted that the blurring of boundaries is at the extreme of "non-ownership" inter-firm relationships and is a characteristic of co-ordination integration. All firms' external relationships lie somewhere on or between market transactions and co-ordination integration. A joint venture, for example, would fall nearer to the co-ordination integration extreme (Oliver, 1990).

## 7.4 Co-operation and Co-ordination Mechanisms

The following section elaborates on the discussion of co-operation presented in Sections 2.4.1 to 2.4.6 in Chapter 2. These sections discuss the importance of co-operation, the role of trust in facilitating co-operation and the factors at play in determining whether co-operation or non-co-operation will emerge.

### 7.4.1 *Organic Interaction to Co-ordinated Interaction*

‘The area of transactions governed by the community market seems to have narrowed with the reduction of typical products, on the other hand, the transactions that are coordinated by a more conscious governance mechanism have grown with the development of product diversification and upgrading in a local system’ (Dei Ottati 1996)

In the early writings on Italian industrial districts co-operation was described as an organic or spontaneous inter-organisational characteristic stemming from a specific kind of organisation of production (i.e. flexible specialisation) combined with the social and cultural characteristics (social values and institutions) of a group of people (Beccattini, 1991). Co-ordination of industrial activities was governed not by hierarchical mechanisms (as in the case of a large firm) but by a system of social sanctions (Beccattini, 1991) that culminated in the ‘community market’ (Dei Ottati, 1991). The belief that industrial districts are the result of a spontaneous process of economic development is however slowly being replaced with the view that conscious co-ordination is the basis for a system of inter-organisational relationships in a given production process (Dei Ottati, 2002, Carbonara, 2002, Boschma and Lambooy, 2002, Lazerson and Lorenzoni, 1999, Paniccia 1998, Harrison, 1994).

The terms organic co-ordination and conscious co-ordination have been formulated by analysts to explain the evolutionary processes actually taking place within industrial districts – for example when leader firms emerge to take control of value chains. Conscious co-ordination has been linked to the growth strategies of individual firms that seek to ‘manage the entire external value chain in order to increase its efficiency,

effectiveness and flexibility' (Carbonara, 2002) It has also been described as a response to structural change (Dei Ottati, Corroleur and Courlet, 2003) and to the prevention of regional insularity (Lazerson and Lorenzoni)

#### **7.4.2 Organic Co-operation**

Organic or automatic co-operation, that co-ordinates transactions on the basis of customs and norms of economic behaviour, occurs in situations where transactions have low opportunistic<sup>1</sup> quasi rents (Dei Ottati, 1994) In such cases, opportunistic behaviour does not lead to large losses for those who are subject to it Local customs suffice as a co-ordination mechanism in such cases as 'violation of these customs gives rise not only to withdrawal of the other party's co-operation, thereby justifying a possible retaliation, but also to social sanctions' (Dei Ottati, 1994) The types of transactions that this mode of co-ordination applies to are those that do not require significant specific investments In other words, they involve the exchange of goods or services that are locally standardised in terms of quality (Dei Ottati, 1994)

#### **7.4.3 Conscious Co-operation**

Conscious or constructed co-operation, as a mode of co-ordinating transactions, stems from the need to safeguard against opportunistic behaviour where there are high appropriable quasi rents and local custom is an insufficient co-ordination mechanism High appropriable quasi-rents occur in transactions that require a specific 'dedicated' investment in order to service the needs of a particular customer Williamson (1985) would in such a case advocate a process of vertical integration as a safeguard mechanism against opportunistic behaviour However, Dei Ottati (1994) offers some alternative solutions based upon 'the particular socio-economic environment of the industrial district' She suggests that where transactions carry high quasi rents, repeated co-operative behaviour (that leads to the establishment of reputation, particularly trust) safeguards against opportunistic behaviour Dei Ottati (1994) outlines further that due to the costs associated with the construction of a reputation of trustworthiness, actors that have engaged in reputation based business relations are

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<sup>1</sup> Opportunism has been defined as 'an effort to realize individual gains through a lack of candour or honesty in transactions' (Williamson et al, 1975 p258 in Dei Ottati, 1991)

more likely to develop preferential economic relations with one another. The resulting organisational form is either an informal group of firms 'connected by co-operative relations and sustained by reciprocal knowledge' (Dei Ottati, 1994) or a lead firm that has developed preferential relations with a supplier or group of suppliers for example.

#### 7.4.4 *Transaction Type and Co-ordination Type*

What is important to note from the above is that transaction type dictates co-ordination type i.e. spontaneous or conscious. A firm therefore, in theory, can develop a portfolio of relationships (with other firms) that may be co-ordinated by the market, by social sanctions inherent within communities, by hierarchies or bureaucracies<sup>2</sup> (Dei Ottati, 1991) or indeed by more conscious and deliberate mechanisms (based on trust derived from repeated transactions, for example). For the most part inter-firm relationships are co-ordinated by non-market mechanisms (Grandori, 1997). Firms are not limited to either purely market transactions or purely co-operative exchanges. It may, however, be more appropriate to use one or other form of co-ordination depending upon the factors highlighted by Dei Ottati (1994) (i.e. whether the transaction carries high or low appropriable quasi-rents). The growing trend towards more conscious forms of transaction co-ordination in the industrial districts is an indication of a shift in transaction types. The rise in innovative activity for example can help to explain the rise in conscious co-ordination. Teece (1996) has outlined the risks associated with transactions where knowledge is exchanged:

' in order to provide full information to the buyer, the seller of know-how may have to disclose the object of the exchange, but in doing so the basis for the exchange evaporates, or at least erodes, as the potential buyer might now have in its possession that which he was seeking to acquire. Accordingly, at least until reputations become established, exchange is likely to be exposed to hazards '

Teece (1996) describes a more conscious form of co-ordination based on what Dei Ottati (1994) has highlighted as repeated co-operative exchanges leading to the

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<sup>2</sup> Transactions are co-ordinated by 'the explicit rules enforced by authorities with discretionary powers' Dei Ottati (1991)



establishment of reputation and ultimately trust. More importantly, what Teece's comments suggest is that in the absence of conscious co-ordination (in whatever form that may take) knowledge would fail to be exchanged and innovation would not occur.

#### **7.4.5 *Co-operation Versus Integration***

Outside of the industrial districts and in the absence of a history of socio-economic relations, vertical integration (as a mode of co-ordinating transactions where there are high appropriable quasi-rents) is not viewed as the only solution to co-ordination problems. In fact, vertical integration is thought to carry its own set of difficulties.

In relation to management systems, Rugman and D'Cruz (2000) attribute failure of the vertically integrated firm to the multi-divisional or M-form arrangement used in management systems. They suggest that it lends itself to internal rivalry among general managers and to intra-organisational rivalry in general. As an alternative form of co-ordination they suggest a process of de-integration in the form of a partner network approach that they term the flagship model (see Section 7.6 below).

#### **7.5 Additional Thoughts on Co-ordination Mechanisms**

Grandori (1997) reiterates the point made above that 'different sets of coordination mechanisms can be used for effectively and efficiently regulating different types of interdependence between units or activity clusters'. In her organisational assessment of inter-firm co-ordination modes (both inside and outside of the industrial districts) Grandori (1997) details a number of co-ordination mechanisms that range from the spontaneous to the constructed – the use of which depends firstly upon the type of network involved i.e. social, bureaucratic or proprietary (see Table 7.1 below for a description of each) and secondly whether interdependence (amongst firms, between firms and non-firm organisations) is pooled, intensive, sequential or reciprocal. Table 7.2 below provides a description of each of these interdependences.

**Table 7 1** Grandori's (1997) Network Types

Type of Network	Grandori's (1997) Description
<i>Social</i>	Network co-ordinated by social rather than formal, contractual means
<i>Bureaucratic</i>	Networks based on formal and explicit contracts
<i>Proprietary</i>	Exchanges in such networks are not based on performance controls. Instead effective co-ordination is achieved on the basis of incentives e.g. profit sharing

**Table 7 2** Types of Interdependence

Type of Interdependence	Grandori's (1997) Description
<i>Pooled</i>	A relation in which each part renders a discrete contribution to the whole and each is supported by the whole'. With regard to inter-firm relations this involves the pooling of resources for joint efforts
<i>Intensive</i>	Joint application of differentiated professional know-how to a common problem or transformation process
<i>Sequential</i>	Link between two activities for which the output of an activity A is the input of activity B
<i>Reciprocal</i>	Like sequential interdependence except output of A cannot be produced without certain inputs from B such as elements of know-how or other resources

For each network type and for each interdependence type there will be different sets of co-ordination mechanisms open to utilisation. For example, the co-ordination mechanisms in a social network where there is a pooled interdependence, are accepted rules of behaviour, shared values and routinized know-how as depicted in the 'classic Marshallian industrial district' (Grandori, 1997). However, the co-ordination mechanism in a bureaucratic network where there is pooled interdependence is likely to take the form of a trade association or horizontal consortia through which regulations and procedural norms are generated. Using Grandori's (1997) typology of co-ordination mechanisms, networks and interdependencies we have highlighted in Table 7 3 the degree of formality in network types and the degree of spontaneity of

consciousness of co-ordination mechanisms depending upon the type of interdependency

What Table 7.3 highlights is that even in what are considered to be informal (social) networks, forms of co-ordination vary from organic to structured depending on certain factors like informational complexity (Gandori, 1996) and whether the transaction has a low or high quasi-rent attaching to it (Dei Ottati, 1994). All of these are inextricably linked to transaction type.

Within the “new” industrial districts (i.e. where conscious co-ordination takes precedence over spontaneous co-ordination) conscious co-ordination mechanisms have revealed themselves in a number of different organisational forms. These are: 1) large firms known as “leader firms” that have developed preferential economic and co-operative relations with a limited number of suppliers; 2) *Gruppi* i.e. groups of firms bound together by economic and social ties, and 3) Non-firm organisations (e.g. business associations, public-private organisations and research centres).

‘These organisations on the one hand, provide local small and medium firms with consulting services, such as professional training, quality certification, financial planning, new product and process development etc. On the other hand they co-ordinate both the productive and commercial activities of the ID firms, activating and managing co-operation processes among firms inside and outside the district’ (Carbonara, 2002)

However, it is leader firms that we are primarily concerned with here.

## **7.6 Leader Firms**


Leader firms tend to be large firms that ‘organise production among groups of smaller firms, introduce technological innovation and expand existing markets’ (Lazerson and Lorenzoni, 1999). The role played by leader firms in orchestrating network relations can have both positive and negative ramifications for industrial districts. On the one hand, leader firms provide ‘the preconditions for industrial districts through the

transfer of technology and skills to an area which ultimately provide the foundation for the creation of small firms' Their exploration of commercial avenues and investment in R&D links the leader firm to both distant and local actors, which places them in a 'strategic position to respond quickly to external market demand, while realigning the productive resource of less sensitively located actors' (Lazerson and Lorenzoni, 1999)

On the other hand the leader firm can cause the emergence of hierarchy and the introduction of oligopoly power that may ultimately threaten the 'typical model of co-operative competition' present in the Italian industrial districts (Harrison, 1994) Through their domination and standardisation of supplier linkages, power structures are such that non-reciprocal arrangements replace what were once symbiotic exchanges (Boschma and Lambooy, 2002)

These examples describe two extremes of the same phenomenon Boschma and Lambooy (2002) have shown however that there are leader firm trajectories which lie somewhere between these two extremes They acknowledge that leader firms can act as barriers to knowledge transfer and joint problem solving by virtue of their 'exit-based' strategies with suppliers In such cases the leader firm acquires the whole supply chain or formalises relationships with a limited number of suppliers Within this hierarchical structure however trust based relationships can evolve between the leader firm and its suppliers based on co-makership and joint problem solving for example This facilitates the diffusion of knowledge but only to a limited number of suppliers Boschma and Lambooy (2002) also describe how a leader firm functions as a bridge for smaller supplier firms 'in terms of access to world markets and external knowledge' It is not possible to divorce the leader firm from its particular context i.e. the relationships it has with its suppliers, its development strategies etc Therefore the merits or demerits of leader firms in local economies are a matter for empirical exploration

**Table 7 3** Modification of Grandori's (1997) typology of co-ordination mechanisms, Network types and Interdependences to include degree of formality and degree of spontaneity/structure in coordination types

		Co-ordination Mechanisms According to Network Type		
		<i>Social Network</i>	<i>Bureaucratic Network</i>	<i>Proprietary Network</i>
		→ Informal →	→ Semi-formal →	→ Formal →
<b>Type of Interdependence</b>				
Organic /Spontaneous  Structured (conscious/constructed)	<i>Pooled</i>	Norms of behaviour, shared views such as those in classic Marshallian industrial district	Regulations and procedural norms through trade associations or horizontal consortia	New firm creation through a joint venture
	<i>Intensive (innovative)</i>	Reputation through repeated transactions	Research Consortia	R&D Joint ventures
	<i>Sequential</i>	Constellations such as leader firm arrangements	Recurrent contracting enabling experimentation with various operational procedures in contract e.g. one way hierarchical sub-contracting	Property rights sharing and hierarchical co-ordination
	<i>Reciprocal</i>	Mutual monitoring and liaison activities through informal sub-contracting	Relational contracting combining both contract with unwritten rules and safeguards	Property rights sharing and lateral integration roles

Related to the concept of the leader firm is Rugman and D'Cruz's (2000) theory of the flagship firm. The flagship model is based upon 'the development of collaborative relationships among major players in a business system'. At the centre of this business system is the flagship firm that 'pulls the network together and provides leadership for the strategic management of the network as a whole'. Also central to the theory, is the existence of firms that have developed key relationships with the flagship firm. Relationships in the flagship model, unlike conventional business relationships (that are based on arms length market transactions and have a short term orientation and single transaction focus), are based upon 'a collective long-term orientation that facilitates the development of long-term competitiveness' (Rugman and D'Druz, 2000). Through 'strategic asymmetry' the flagship firm exercises non-reciprocal control over network partners' products, markets and capital investments as well as courses of action in the development of competencies and capabilities. In return, the flagship network member can enjoy 'the prospect of significant sales volumes, access to advanced technology and the participation in the benefits of the brand image of the flagship'.

How this relates to the leader firm concept is that it has implications for organisational boundaries and presents an organisational structure that opts for co-ordination rather than ownership integration. Rather than vertical corporate integration, there is here dis-integration.

#### ***7.6.1 The Role of the Leader Firm in Knowledge Transfer and Innovation processes***

Carbonara (2004) has highlighted three mechanisms that underpin the way in which firms learn. These are empirical learning, learning by emulation and learning by acquisition. 'The networking processes activated by leader firms constitute the fundamental mechanism on which the development and the acquisition of new knowledge are based. Therefore, this learning mechanism can be defined as learning by interacting' (Carbonara, 2004). Learning processes and therefore innovative processes can be directly attributed to the actions of leader firms.

It may be important to note at this point what is meant by innovation. Put simply, 'innovations are new creations of economic significance' (Edquist *et al* 2002). There are two categories of innovation – product and process. However, as highlighted in Section 7.3 above and Section 2.9 of Chapter 2, innovation may be more broadly interpreted to include a range of other activities and indeed in a range of traditional, low-tech industries.

What is universally accepted is that knowledge is key to the innovation process. Cohen and Levinthal (1990) stress that knowledge transfer is critical for a firm if it is to respond to change, if it is to innovate and ultimately if it is to achieve competitive success. Industrial districts, due to their unique characteristics that are inextricably linked to place, can become insular with regard to the attainment of new knowledge.

Industrial districts are rich in internal knowledge, i.e. knowledge of an operative kind that is embedded in place (Albino *et al*, 1999). The districts' access to external knowledge is limited to that obtained on the market, e.g. demand levels, required product performance etc. (Albino *et al*, 1999). Acting as a bridge between internal and external knowledge, the leader firm channels new knowledge from its regional, national and often global links back to district based small sized suppliers (Boschma and Lambooy, 2002). For knowledge transfer to take place the relationship between the leader firm and supplier must be a collaborative one where openness, trust and prior experience are shared characteristics (Albino *et al*, 1999). It is obvious therefore that knowledge transfer is less likely to occur between a leader firm and supplier where the relationship is hierarchical or where there is unilateral power.

### *Empirical Data and Analysis*

#### **7.7 Introduction and Background to Case Study**

Interest in the fish processing and production sector stemmed initially from quantitative analysis of employment data that indicated a spatial concentration in North Dublin (See Table 7.4 for trends in employment and Table 7.5 for location quotient history and changes in firm numbers). Given the strong association between spatial concentrations and cluster activity an investigation was initiated to determine

the nature of relationships amongst firms and between firms and supporting organisations

This subsequent investigation relied upon qualitative techniques (namely interviews) firstly to determine the nature and structure of the industry including inter-organisational relationship types (market and non-market) with regard to a specific number of North Dublin firms<sup>3</sup>. From there, it emerged that a market relationship between a fish processor (supplier) in Howth and a national supermarket chain (buyer) with head offices based in nearby Sutton, had evolved into a co-operative, collaborative and information sharing (resulting in knowledge transfer and innovation) leader firm-supplier arrangement that was worthy of investigation and analysis. Furthermore, (through subsequent interviews)<sup>4</sup> it was revealed that forms of horizontal co-operation among Howth fish processors bore some of the hallmarks of the Italian industrial districts.

Similarly, vertical co-operation in certain supply chains, i.e. from a fish farm (ISPG<sup>5</sup>) to secondary processor (Oceanpath) to retailer (Superquinn) and between the Howth fish auction house (Howth Fish Sales Ltd) and local fish processors, displayed industrial district type “collective action” characteristics. Underpinning some of the inter-firm relationships are the co-ordinating efforts of a supporting organisation – BIM, the Irish Fisheries Board – at least contributing to what is referred to as “institutional thickness” in the industrial district literature (Amin, 1999).

Regarding co-ordinating mechanisms of inter-firm relationships it is fair to say that there is a mix of co-ordination mechanisms at play. Inter-firm relationships that are co-ordinated on the basis of shared values and norms of economic behaviour exist alongside inter-firm relationships that are (more consciously) co-ordinated on the basis of repeated transactions and sole supplier relationships.

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<sup>3</sup> North Dublin Firms were compiled from a list of Enterprise Ireland supported companies. See Appendix D for details.

<sup>4</sup> See Appendix B for details of all interviews conducted.

<sup>5</sup> The Irish Seafood Processors Group.



## 7.7.1 Economic Conditions and Environment

The purpose of this section is to give overall context to the case study data. Table 7.4 shows how overall levels of employment in fish processing and preserving have declined in North Dublin yet in Ireland as a whole there has been growth. Table 7.5 shows a decline in the number of fish processing firms in North Dublin yet at the same time the location quotients indicate a relative spatial concentration of employment in the area. Despite the recorded increase between 2000 and 2001 employment decline can be attributed to a more general pattern of consolidation amongst processors in this mature sector – a process which in itself can be attributed to forces emanating from the purchasing side i.e. retail multiples. In other words, processors have consolidated to reflect the limited number of retail customers now present in the Irish market place (Lane, Interview, 2004).

**Table 7.4** Trends in Number of Employed (Full-time) in Processing and Preserving of Fish and Fish products (NACE 1520) from 1985 to 2001 in North Dublin and Nationally

	1985	1990	1995	2000	2001
<b>North Dublin</b>	305	297	252	245	283
Percentage change in employment in period		-2.62%	-15.15%	-2.78%	15.51%
<b>National</b>	2,085	2,313	2,112	2,394	2,600
Percentage change in employment in period		10.94%	-8.69%	13.35%	8.60%

*Source: Forfás Unpublished Employment Data*

In response to structural change, processors are attempting to differentiate themselves by engaging in value added production and by carving out niche markets for themselves (Lane, Interview, 2004, Smith, Interview, 2003). Both BIM and Enterprise Ireland acknowledge the benefits of co-operation in tackling the changing economic climate. Through BIM's Market Investment Programme (MIP) individual firms receive up to 40 per cent grant assistance whereas collective projects can receive up to 60 per cent grant assistance. The supporting organisations are mindful of the opportunities to co-operate, which lie in purchasing and logistics for white fish and wet fish production (Crowne, Interview, 2004).

**Table 7.5** Location Quotients and number of firms in Processing and Preserving of fish and Fish products (NACE 1520) from 1985 to 2001 in North Dublin

	<b>Location Quotient</b>	<b>No of Firms</b>
2001	1.15	12
2000	0.98	13
1995	1.13	13
1990	1.15	16
1985	1.16	19

*Source: Calculations based on Forfas Unpublished Employment Data*

In addition to uncertainty on the purchasing side there is uncertainty on the supply side and firms are continuously adapting to changing supply situations. Diminishing raw materials caused by over-exploitation of conventional species of fish and the imposition of quotas has led processors to seek alternative inputs (both at home and abroad). Regulation in the form of the Common Fisheries Policy (CFP) imposes limits on supplies and types of species available. Aquaculture production (i.e. farm produced fish and seafood) can reduce uncertainty in the supply of certain species such as salmon. However, aquaculture production has not reached significant levels either on a national or a European basis. Aquaculture production in 1999 produced 44,000 tonnes compared to 285,957 tonnes caught by the Irish fleet (Stevenson, 2003).

Within the European Union, only two countries, Ireland and Sweden, export more fish and fish products than they import. Table 7.6 shows Ireland's external trade from 2000 to 2002 in terms of value and volume. Interestingly the increase in value of produce exported is coupled with a decrease in volume exported. This is an indication of increasing value having been added to these products.

Table 7.7 shows that gross output of local units involved in the processing and preserving of fish and fish products has increased by 21 per cent over the four year period from 1997 to 2001.

**Table 7 6** External Trade of Fish and Fish Products

	2000	2001	2002
<b>Exports</b>		<i>Value 000 euro</i>	
	333,153	447,026	424,975
		<i>Tonnes</i>	
	216,898	314,371	307,368
<b>Imports</b>		<i>Value 000 euro</i>	
	127,948	165,461	142,562
		<i>Tonnes</i>	
	70,435	114,458	94,561
<b>Net Exports</b>		<i>Value 000 euro</i>	
	205,205	281,565	282,413
		<i>Tonnes</i>	
	146,463	199,913	212,807

*Source* CSO, External Trade, 2002, 2001, 2000

**Table 7 7** Gross Output of Local Units in Processing and Preserving of Fish and Fish Products

	1997	1998	1999	2000	2001
<b>Gross Output</b> 000 euro	301 3	303 9	315 2	342 9	365 6

*Source* CSO Census of Industrial Production, 1997, 1998, 1999, 2000, 2001

## 7.7.2 Support of Non-firm Organisations

The industry is heavily supported by BIM (Bord Iascaigh Mhara – The Irish Sea Fisheries Board) in terms of industry marketing, grant aid<sup>6</sup> and the development of quality assurance schemes<sup>7</sup>. Collective marketing for seafood processors is conducted through BIM's annual Irish Seafood Expo. Through its MIP it supports marketing activities of both individual and group seafood processors. In 2003 it funded a total of 36 projects (9 of which were collective) amounting to grants worth €1.259 million. Non-firm organisational support is highly co-ordinated in that BIM collaborates closely with Bord Bia (Irish Food Board) and Enterprise Ireland in overseas market development activities.

Due to the small size of firms operating in the fish-processing sector (see Table 7.8 for average number employed per firm) very few companies have in-house marketing personnel. In the absence of such personnel, BIM (through various support schemes) seeks to create *ad hoc* capabilities for its client companies. This is similar to the institutional arrangements in some Italian industrial districts where, for example, producer co-operatives in the tile manufacturing industry provide centralised exhibitions and organise small firms to participate in international trade fairs (Langlois and Robertson, 1995 pp137-138).

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<sup>6</sup> BIM awarded grant aid of €645,000 on investment of €2.755 million to 23 project applicants under the Fish Handling and Seafood Processing Development Measure in 2003. Total grant-aid to industry amounted to €10.174 million in 2003.

<sup>7</sup> BIM have developed five quality assurance schemes. These are for salmon (IQS), trout (IQT), mussels (IQM), oysters (IQO) and most recently the Quality Seafood Programme (QSP) which ensures the highest levels of quality have been maintained from product harvest to processing and packing.

**Table 7 8** Average Size of Firms in Processing and Preserving of Fish and Fish Products (NACE 1520)

Year	Average Number Employed per Firm	
	<i>North Dublin</i>	<i>Ireland</i>
2001	24	22
2000	19	20
1995	19	19
1990	19	19
1985	16	17

*Source* Unpublished Forfas Employment Survey data

Langlois and Robertson (1995 pp137-138) describe this type of link as quasi-horizontal integration – adding that ‘the producer co-operative forms the basis of quasi-vertical integration, as the producers [small firms] are able to add marketing expertise to their distinctive competencies in design’ (Langlois and Robertson, 1995 p138)

## 7 8 Location - Howth Harbour

Howth Harbour was constructed between 1807 and 1816 to serve as the official mail packet station on the Dublin to Holyhead route. Due to constant silting problems and failed efforts to control it the decision to relocate the station to Dun Laoghaire was taken. Since then, Howth harbour has evolved into a busy fishing port and recreational marina (the origins of which date back to 1895 when Howth Yacht club was founded). It is one of only five designated Fishery Harbour Centres<sup>8</sup> in Ireland. The other four are located in Castletownbere, Dunmore East, Galway, and Killybegs. Although development within the fishing industry, both in terms of fleet renewal and harbour improvements is concentrated along the Atlantic seaboard, Howth boasts an unrivalled tradition in whitefish processing for the domestic and international markets (*Irish Skipper*, 2004). It is a home port for 15 trawlers and 12 half deckers. These numbers can increase by another dozen or so depending upon the season. There are two fish auctions per week with anything from 500 to 1000 boxes being auctioned at

<sup>8</sup> Howth Harbour became a Fishery Harbour Centre following the Fishery Harbour Centre (Howth) Order, 1989 made under the Fishery Harbour Centres Act, 1968

any one time – an indication of a viable fishery (*Irish Skipper*, 2004) Although employment figures have fallen in recent years, fishing (including the fish processing sector) is an important employment generator in Fingal County. Howth is directly responsible for 500 jobs (Fingal County Council, 2004)

## 7.9 Fish Processing Firms in Howth

There are four fish processors located on the west pier of Howth harbour – Oceanpath Ltd, Wrights of Howth, Lett-Doran & Co Ltd and Beshoffs of Howth. All four firms are family owned and operated and all are small enterprises<sup>9</sup>. All but one firm – Oceanpath – have had a long association with Howth harbour. Wrights was established in 1890, Beshoffs in 1911 and Lett Doran in 1961. Although Oceanpath was only founded in 1995, its three founders – Alan Ecock, Charles Slattery and Noel Ryan had all previously worked for and been shareholders of Lett Doran and between them had amassed considerable experience of the fish processing industry and, in particular, its operation out of Howth.

Wrights of Howth specialise in the production of smoked salmon and the processing of fresh fish and shellfish. In addition to being a primary and secondary processor<sup>10</sup> they, like Oceanpath, act as a wholesaler at the Dublin Fish Market that has been held daily in Smithfield since 1894. This means that other fish processors are among their customers and implies both a horizontal and vertical association between the Howth processors. For example, as the largest wholesaler in Dublin, Oceanpath supply to Lett Doran via auctions held at the fish market. At the same time, Oceanpath and Lett Doran compete in the same market i.e. they both supply to retail multiples. In the last year Oceanpath has started supplying to Dunnes Stores – a customer of Lett Doran. This is an example of direct competition between the firms. The others, i.e. Wrights and Beshoffs, supply to their own specialty shops (restaurants in Beshoffs case), to collective catering (pubs/restaurants) and to commercial catering (industrial). Lett Doran and Oceanpath supply primarily to retail multiples and to a lesser extent the

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<sup>9</sup> Wrights of Howth employs between 46-50 people, Beshoffs of Howth employs between 11 and 15 people, Lett Doran & Co employs between 26-30 people and Oceanpath employs between 36 and 40 people (Source: Lane, Interview, 2003)

<sup>10</sup> Primary processed fish means that it is cleaned only. Secondary processing can include any of the following: gutted, steak/cutlets, Block/Butterfly, Daines, Smoked, Frozen, battered, breaded, canned, and ready prepared meals.

catching industry. In their supply to the catering industry all firms compete against one another to varying degrees.

The interdependency between fish processors can be attributed to a high degree of specialisation. Rockabill, for example, is a processor of shellfish and is located in nearby Balbriggan. As a shellfish processor with its own fleet of boats it has no use for its by-catch of whitefish. Instead of processing these superfluous inputs, Rockabill sell them on to Oceanpath that specialises in the processing of these inputs.

### **7.10 Elements of Co-operative Competition**

All four firms source inputs from (amongst other locations) the auction hall on Howth's west pier that has been operated by Howth Fish Sales Ltd since 1993. Howth Fish Sales Ltd is a subsidiary of HJ Nolan Ltd (a company that has been smoking salmon in Dublin since 1921). Howth Fish Sales buys from a number of the trawlers and holds an auction at least twice a week at which representatives from all four firms bid for inputs. Processors also deal directly with fishermen. It is at the fish auction where an unwritten, even unspoken, collective agreement appears to coordinate or regulate firms' behaviour in relation to bidding and indicates co-operative rather than rivalrous competition. Each of the firms knows what the other is hoping to source. This means that if only one firm wants a particular lot the other firms do not bid against that one firm. In other words, bidding which would result in a firm paying more than is necessary for a particular lot, is not entered into.

If competition were rivalrous it would be in firms' interests to eliminate their competitors or at least gain an advantage over a competitor by pushing up that competitor's input prices. This is what has been termed destructive competition (see Section 2.4.5 in Chapter 2 for discussion of this). Instead, as in the industrial districts, 'orientation towards long run development as an objective rather than a quest for short term economic gains' (Sengenberger and Pyke, 1992, 19) motivates and underpins co-operative or "fair competition" (Paniccia, 1998) for the sourcing of inputs by Howth fish processors. This represents a collective approach to the manner in which inputs are obtained on the local market. Having said that however, we must acknowledge

that scale and structure (i.e. that certain inputs are not required due to specialisation) ameliorates the competition more so than the objective of long-run development

In Italian industrial districts co-operation is based on a set of values or common culture that is shared by a community of people and 'spread throughout the district, supported and transmitted through generations' (Panizzia, 1998). In Howth, fish processors are geographically and historically bounded and as in industrial districts 'face to face relationships are frequent and people tend to interact continuously, thereby developing a common culture' (Panizzia, 1998). Through attendance at fish auctions, competing processors have developed a history of interaction and as such have developed knowledge based trust i.e. knowing the other sufficiently well through this interaction (Dwivedi *et al.*, 2003). This has enabled them to share information on the price of inputs (see Section 7.10.1 below)

In Howth, family has provided a vehicle for the transmission of values and norms of economic behaviour. This is best demonstrated by an example. The manner in which Oceanpath, and in particular its business relations manager, deals with suppliers (fishermen, fish auction operators, co-operatives, etc.) is based on values handed down from his father, one of the co-founders of the company. He believes that "there is no point squeezing the fisherman over price if he's not there in 6 months time. It's in the industry's and our interest to keep the fisherman in business." This demonstrates collective vision and interest in the performance of the industry as a whole.

#### **7.10.1 *Information Sharing (Commercial)***

In industrial districts 'proximity of firms and population ensures continuous flows of technical and commercial information'. This is certainly the case (with regard to commercial information) in Howth where it is commonplace to telephone a competitor and ask them what they are paying for certain inputs. This is a reciprocal arrangement, relying on communication as a co-ordination mechanism (Grandori, 1997). There is evidence (see Section 7.10.3 below) of technical information sharing beyond the geographical boundaries of Howth and indeed Dublin that can be explained by *organisational* rather than *spatial* proximity.



### **7 10 2 Resource Sharing**

In Howth, the extent of resource sharing is limited but none the less evident – between vertically rather than horizontally linked firms. Howth Fish Sales shared their refrigeration space with Oceanpath on a regular basis prior to the completion of Oceanpath’s new production facility. This involved Oceanpath having a key to Howth Fish Sales’ premises so that inputs could be accessed at any time. This indicates trust between the two firms.

### **7 10 3 Information Sharing (Technical)**

The sequential or transactional interdependence between ISPG (supplier of farmed salmon and trout, based in Galway) and Oceanpath (buyer of farmed salmon and trout for processing) has enabled a “learning through interaction” situation to emerge. This is more famously found in high-tech manufacturing industries between the producers of manufacturing technology and the users (Gertler, 1995). Oceanpath has sourced inputs from ISPG since its establishment in 1995. Over time, and through repeated relational and interpersonal connections as well as a shared institutional environment (see below) technical information and knowledge in relation to traceability systems were transferred to Oceanpath so that they could be applied to its production system.

Using Bender and Laestadius’s (2005) terminology Oceanpath’s “innovation enabling capability” lies in its ability to ‘transform available general knowledge and competence into plant, firm or task specific knowledge and competence’ (i.e. its transformative capabilities). The way in which Oceanpath was able to transform knowledge engendered in equipment and specific to another sector of industry (i.e. chicken processing) and modify it for its own needs has enabled the creation of know-how and led to new skills and routines being acquired. Facilitating the transfer of technical knowledge is Superquinn – the leader firm. Acting as a “bridge” it facilitated Oceanpath’s contact with Carton Brothers – the chicken processors. (See section 7 12 3 below for further detail.)

Through accreditation to BIM's IQS (Irish Quality Salmon) scheme, ISPG and Oceanpath share similar operational conditions and codes of conduct in that ISPG is the only salmon farmer in Ireland approved under the scheme and Oceanpath is the only secondary processor in Ireland approved under the scheme. Sharing similar operational conditions and codes of conduct are the conditions necessary for the creation of organisational proximity (Burmester and Colletis-Wahl, 1997, Heanue and Jacobson, 2001/02)

The interdependence between the firms is not just sequential but is also pooled. It is pooled interdependencies that are more characteristic of Marshallian industrial districts (Grandori, 1997). Both Oceanpath and ISPG have allocated resources (human, financial and temporal) to the promotion of farmed salmon and to the education of the retailer (Superquinn, buyer of Oceanpath's processed farmed salmon) on all aspects of salmon farming<sup>11</sup>

#### **7.10.4 *Mix of Relationship Types and Co-ordination Modes***

Whether these interdependencies and co-operative processes would have developed spontaneously is entirely questionable. There is certainly a mix of co-ordination mechanisms at play, some of which can be directly attributed to the strategies of a leader firm. It is possible at this stage to segregate the types of co-operative processes and the manner in which they are co-ordinated.

The sharing of technical information is a by-product of a pre-existing economic or transactional relationship. Information sharing between competitors is limited to commercial (specifically price) only. Although there is co-operative competition there is still risk of opportunistic behaviour. An economic relationship that has developed over time can act as a safeguard against opportunism. Where there are repeated economic relations there is a greater degree of trust. This is exemplified in the case where refrigeration space was shared between vertically aligned firms.

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<sup>11</sup> In August 2004 36 Superquinn employees were brought to ISPG in Galway for a day's training in regard to this.

The information sharing between local fish processors can be classed as a social trust i.e. shared expectations of honest behaviour within a local community (Lorenzen, 2001/02) The trust between vertically linked firms is however dyadic trust i.e. mutual trust between two firms that is co-ordinated on the basis of reputation

‘When a firm is part of a community in which the likelihood of interacting with other members is relatively high – in game theory terms, in the case of repeated games – it will have incentives to comply with the dominant conventions in order to maintain a good reputation (Lorenzen, 2001/02)’

Table 7.9 shows the types of co-operation and co-ordination mechanisms present in Howth amongst fish processors and between fish processors and suppliers and summarises what has been said in Sections 7.10 to 7.10.4 above. In each link – whether horizontal or vertical – connections can be described in terms of *social networks* i.e. they are both informally created and co-ordinated. In horizontal relationships, the basis for co-operation is shared values and commonality while in vertical relationships the basis for co-operation is repeated economic or transactional exchanges.

**Table 7.9** Type of Co-operation and Co-ordination Mechanisms Between Firms in Fish Processing Sector

Type of Co-operation	Link	Co-ordination Mechanism	
<i>Fair competition &amp; collective action</i>	Horizontal	Shared values & social trust foundations for rules of game	<i>I</i> <i>N</i>
<i>Information Sharing (Commercial)</i>	Horizontal	Shared values & social trust foundations for rules of game	<i>F</i> <i>O</i>
<i>Resource Sharing</i>	Vertical	Repeated transactional exchanges	<i>R</i> <i>M</i>
<i>Information Sharing (Technical)</i>	Vertical	Repeated transactional exchanges	<i>A</i> <i>L</i>

## 7.11 The Evolution of a Leader firm-Supplier Relationship

Oceanpath has been Superquinn's sole supplier of fresh fish since 1995 (when Oceanpath was founded). However, there is a history of recurrent contracting and interpersonal links that predates the establishment of Oceanpath. Prior to 1995 Superquinn sourced fresh fish from a number of different processors but primarily from Lett Doran & Co. From the late 1960's to the end of 1994 Superquinn bought fish from Lett Doran. For almost 30 years Alan Ecock handled the Superquinn account. The frequent, often face-to-face encounters and repeated exchanges between himself and various Superquinn buyers, but in particular Damien Carolan (Purchasing Director), facilitated the development of process based trust i.e. trust developed over a period of time (Lorenzen, 2001/02) and through 'imputation from outcomes of prior exchanges [which] provides data for current or future exchanges' (Dwivedi *et al*, 2003). Adding to this definition of process-based trust, Lazerson and Lorenzoni (1999) suggest that it involves regular testing of each other's reliability and probity.

It was in 1971, during a fish blockade that commitment on the part of Lett Doran and in particular by shareholder/manager Alan Ecock, was first demonstrated. At the time, supermarkets in Ireland were unable to source fish. However, through Alan's contacts an arrangement was made for Superquinn that enabled it to be the only supermarket in the country with a supply of fresh fish. Ecock's demonstration of commitment, reliability and probity led to Superquinn's trust in him.

Throughout the almost 30 year supplier-buyer relationship, exchanges were market based (i.e. on a transaction by transaction basis) and Superquinn practised multiple sourcing so as to hedge against inaccurate pricing or opportunistic behaviour. A turning point in Superquinn's approach to suppliers can be traced to its involvement in the European Coca Cola Research Group from 1987 to 1992 (Kelly, 2002). Through interaction with European counterparts Superquinn learned that supplier-retailer collaboration (SRC), particularly with regard to fresh foods where the retailer is the brand (as opposed to manufacturer branded goods), could improve performance significantly. Superquinn's response to this information was to initiate a supplier partnership with a number of fresh food suppliers i.e. suppliers of beef, chicken, eggs, fish, cheese and vegetables. Superquinn committed itself to single sourcing – an

expression of trust in customer-supplier relationships (Harrison, 1994) – provided the supplier demonstrated commitment, openness and trust (C O T ) Commitment meant that both sides would fully commit all resources to an agreed change programme within a given time frame Openness on the supplier side meant Superquinn offering open book costings and transparency in all their dealings with suppliers This facilitated the evolution of dyadic trust

Superquinn's rationale behind the development of collaborative or co-operative relationships with suppliers mimics the strategies of leader firms in Carbonara's (2002) study of firms and networks in the furniture industrial districts of Bari-Matera, Forlì, Pistoia and Udine where leader firms established collaborative relationships only with suppliers or sub-contractors that 'play a strategic role in the value chain and/or have a strategic complementary competence' In this sense Superquinn – as the leader – is determining the strategy It is initiating the changes and determining the rules of a new game Ecock was in some sense at an advantage because of the pre-existing establishment of trust, which was one of the main rules of the new game

Given Lett Doran's history of supply and recurrent contracting and previous demonstrations of trust as well as the establishment of reputation through repeated exchanges it would seem inevitable that Superquinn and Lett Doran would enter into partnership with one another However, due to a number of factors such as unwillingness to commit to change, reluctance to operate on the basis of open book and in particular its slow rate of development and use of traditional production techniques, and in general absence of the innovation enabling capability required to respond to demand-led change, this partnership failed to emerge Entrepreneurial vision on the part of three of Lett Doran's shareholders spurred them to sell their shares in the company and form a rival firm – Oceanpath – with the express purpose of entering into partnership with Superquinn Like the leader firms of industrial districts, Superquinn's supplier selection process was not purely based on price but also on reliability, flexibility and innovation capability (Carbonara, 2002) Superquinn's buyer expressed the opinion that Oceanpath's youthfulness was a positive attribute "Oceanpath didn't have any baggage – we could mould them just the way we wanted" (Kelly, Interview, 2004)

### **7.11.1 *The Oceanpath-Superquinn Partnership***

The partnership is an informal one in that no written contract exists to bind the firms as partners. Although the relationship is co-ordinated on the basis of structured or conscious mechanisms e.g. mutual monitoring and liaison activities, as described by Grandori (1997), it may be classed as a social rather than bureaucratic network. If for example the partnership were characterised by both relational contracting and a set of written rules (i.e. a contract) then it would be deemed a bureaucratic network (see Table 7.3 that differentiates between co-ordination mechanisms in social and bureaucratic networks where the interdependencies are sequential and reciprocal). The interdependency between the two firms can be described as sequential. This is not to say however that the relationship is not characterised by reciprocity. In fact it bears all the features of a symmetrical partnership i.e. sharing of resources, joint decision-making, joint marketing etc.

### **7.12 Collaboration and Dependency**

To evaluate the degree of collaboration and dependency in the inter-firm relationship between the leader firm (Superquinn) and the supplier (Oceanpath) we can apply Carbonara's (2002) parameters. For collaboration, she suggests frequency of communication, resource sharing and information sharing about processes and products as well as co-design practices. Carbonara (2002) uses a binary system of evaluating these parameters, i.e. high or low (not numerical). Where all the indicators are given a high value then there is a high degree of collaboration. For dependency, the parameters are the degree of exclusivity of the relationship and the degree of dependence on technology and knowledge. Similarly, where there is a high value attaching to all then a high degree of dependency is implied. Table 7.10 illustrates the degree to which the relationship between Oceanpath and Superquinn is collaborative and Table 7.11 indicates the degree of dependency. Elaboration on each of the points will shed further light on the nature of the relationship.

### **7 12 1 *Frequency of Communication***

The personal and frequently face-to-face contact between Ken Ecock (Oceanpath's business relation's manager) and the buyer, Brian Kelly (Superquinn) in terms of knowledge transfer processes can be described as a medium with a high degree of richness i.e. it facilitates equivocality reduction (Albino *et al*, 1999) The frequency of communication is facilitated by the fact that both Ken and Alan Ecock have swipe access passes to Superquinn's head offices in Sutton where they can meet with Superquinn personnel on both an informal and formal basis and access any documentation relating to the seafood category (as if they were a Superquinn employee)

### **7 12 2 *Resource Sharing***

In terms of resource sharing, Superquinn have assigned personnel for co-marketing and co-generation of new production development ideas – meetings for which are held every two months In 2002, when Oceanpath built a new production facility (at a cost of €3,000,000) Superquinn guaranteed a loan for its development without which it would not have been built Through the partnership arrangement Oceanpath can avail of Superquinn's scale in terms of buying power which has enabled Oceanpath to make cost savings on the purchase of non-input materials like stationery and protective clothing but also on input materials like sauce ingredients for value added products

Prior to the completion of the new production facility Ken Ecock occupied an office in Superquinn's nearby head offices in Sutton For six months he acted as Superquinn's buyer (while suitable candidates were being sought) without remuneration At the same time the Oceanpath manager was able to access Superquinn resources (as if he were an employee) This is all evidence of reciprocal resource sharing

### **7 12 3 *Information Sharing about Processes and Products***

The leader firm can act as a valuable source of knowledge providing ‘information about the supplying markets, training on quality management, and production techniques, collaboration at the beginning of the order, visits to check the state of the order etc.’ (Carbonara, 2002) Where Superquinn has not had direct knowledge of a process or aspect of production it has acted as a gateway to that information for Oceanpath. Boschma and Lambooy (2002) class this type of leader firm as a “bridge” leader firm. They suggest that bridge leader firms ‘pass on benefits of external and global links by transferring external knowledge’ (Boschma and Lambooy, 2002). Before Oceanpath installed a traceability system they examined the traceability system in place in the Carton Group’s chicken processing operations (based in Co. Cavan) and adapted it for fish processing (Carton Group is another Superquinn supplier.)

**Table 7.10** Application of Carbonara’s (2002) Proxies for Collaboration Between Leader Firm and Supplier to Superquinn and Oceanpath Inter-firm Relationship

<b>Parameters for Degree of Collaboration</b>	<b>Value</b>	<b>Between Superquinn &amp; Oceanpath</b>
<i>Frequency of Communication</i>	High	<ul style="list-style-type: none"> <li>• Daily contact – telephone, e-mail and face to face interaction</li> </ul>
<i>Resource Sharing</i>	High	<ul style="list-style-type: none"> <li>• Personnel</li> <li>• Financial</li> <li>• Buying power</li> <li>• Office space &amp; Equipment</li> </ul>
<i>Information Sharing about Processes and Products</i>	High	<ul style="list-style-type: none"> <li>• Market information – what consumers are buying via access to SAP</li> <li>• Bridge to information – access to technical info via Superquinn’s other partners</li> <li>• Quality Assurance</li> <li>• Traceability</li> </ul>
<i>Co-design Practices</i>	High	<ul style="list-style-type: none"> <li>• New product development – ideas are co-generated</li> <li>• In-store product presentation</li> <li>• Joint marketing</li> <li>• Launch of new quality standards</li> </ul>



Superquinn, over a number of years and through a process of empirical learning (i.e. learning by doing, learning by using and trial and error processes (Carbonara, 2004)) with its other perishable food partners, has developed its own in-house quality assurance/hygiene standard. This standard has resulted in the “codification” of technical and organisational knowledge with regard to “quality” procedures in production processes – the resulting “codebook” is the Superquinn Hygiene Manual. Leader firms in Italian industrial districts, to control each aspect of production, have used this codification procedure.

‘By the codification process and the consequent higher knowledge transfer speed, the leader firm has been able to improve the knowledge communication and acquisition processes. In other words the leader firm has reduced the uncertainty and equivocality of the transferred knowledge related tasks’ (Albino *et al.* 1999)

A more recent development has given Oceanpath access to market information through Superquinn’s SAP<sup>12</sup> system. This is an example of both resource sharing and information sharing. As a valuable market tool, SAP can provide Oceanpath with data on real time product sales that can assist in determining what inputs to source, for example what type of fish to buy and which value added product lines to expand upon, reduce or withdraw. This information is also useful in any dealings Oceanpath has with other customers (retailers).

At this point we can return to Bender and Laestadius’s (2005) “innovation enabling capabilities” as raised in Section 7.10.3 above. In addition to transformative capabilities they suggest that configurational capabilities enable innovation processes. By this they mean ‘an enduring ability to synthesise novelty by creating new configurations of knowledge, artefacts and actors’. Oceanpath, again using Bender and Laestadius’s (2005) terminology, may be classed as a firm with a second or third stage innovation strategy. By this, they mean that new product or process technologies are too risky and too costly to pursue. Instead, such firms watch new

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<sup>12</sup> SAP is a computerised system that facilitates management of all aspects of retail value chain, from forecasting and planning to allocation and replenishment.

developments either on the market or at trade fairs. In fact, these are exactly the tactics pursued by Oceanpath (Ecock, Interview, 2004)

If the novelty (observed on the market or at trade fairs) is of interest, Bender and Laestadius (2005) suggest that firms seek a partner from whom the appropriate technology can be acquired. The success of such a strategy depends upon ‘both the available know-what and know-where and the accessibility of financial and other resources to keep knowledge constantly up to date’ (Bender and Laestadius, 2005). In this sense Superquinn has significantly enhanced Oceanpath’s configurational capabilities by providing financial support for the modification of production systems and attendance at trade fairs. (As indicated below in Section 7.15 Oceanpath attends trade fairs under Superquinn’s name)

#### **7.12.4 Co-design Practices**

We can interpret co-design practices as any joint approach to product design involving the two firms. Despite the fact that Superquinn is the brand on any value added meal produced by Oceanpath, Oceanpath have an input into its development and final presentation. Similarly, with regard to marketing of products, Oceanpath, along with the Superquinn marketing team, develop in-store marketing campaigns. There is therefore an intensive interdependency between the two firms i.e. ‘joint application of complementary resources to a common problem in an integrated way’ (Grandoin, 1997). The co-development of the IQS (Irish Quality Salmon) standard under the umbrella of QSP (BIM’s Quality Seafood Programme) reaffirms the claim that there is an intensive interdependency. Along with BIM, Superquinn and Oceanpath collaborated to launch a new standard for the packing and handling of farmed salmon which, as yet, has not been implemented by any other secondary processor or retailer.

#### **7.12.5 Degree of Dependency**

Exclusivity is unilateral between Superquinn and Oceanpath. In other words, Oceanpath is Superquinn’s only supplier of seafood yet Oceanpath have other customers – among them some of Superquinn’s competitors e.g. Dunnes Stores.

Similarly, while Superquinn may obtain certain chicken products only from the Carton Group, Carton are free to sell to other retailers and, in fact, have a strategic alliance with Musgraves, too. In Carbonara's (2002) examination of eight leader firms the degree of exclusivity was high in all cases. However, where exclusivity evolves into monopsony – that is where the leader firm stipulates that the supplier is to deal solely with them – dependence is not in the best interest of the supplier. Harrison (1994) argues that the emergence of oligopoly power as exemplified in the case of leader firm, Benetton, its subcontractors and sub-suppliers, is detrimental to co-operative competition in industrial districts. However, where exclusivity is as described in Superquinn and Oceanpath's case, the leader firm encourages the supplier firm 'to develop multiple relations with other final firms, rather than seeking to hold them hostage' (Lazerson and Lorenzoni, 1999). Through Oceanpath's continuous relations with other customer firms (e.g. SuperValu, EuroSpar and Dunnes Stores) it can avail of 'many more points of contact and information than agents working within hierarchical organisations where information is often purposely limited' (Lazerson and Lorenzoni, 1999).

In assessing the degree of dependence that the supplier has on the leader firm for technology and knowledge, Carbonara (2002) states that such technology and knowledge is the property of, or is owned by the leader firm. Superquinn has not directly provided technology but it has been the driving force behind Oceanpath's use of new processes and automated production (see below). With regard to Superquinn as a source of information there is a high degree of dependence. This dependence is, to some extent, reciprocal. Superquinn needs Oceanpath's knowledge of products and of the seafood sector as a whole to ensure that it is a "knowledgeable" retailer (especially in light of the fact that its brand name is on Oceanpath-produced value added meals). For Oceanpath, knowledge in relation to consumer tastes/demands, quality standards and organisational administration obtained from Superquinn, has enabled it to become one of the top wet fish processors in Ireland (Crowne Interview, 2004, Lane, Interview, 2004, Smith, Interview, 2003). An additional proxy may therefore be proposed i.e. dependence on leader firm for strategic development.

**Table 7 11** Application of Carbonara’s (2002) and Additional Proxies for Dependency Between Leader Firm and Supplier to Superquinn and Oceanpath Inter-firm Relationship

Parameters for Degree of Dependency	Value	Between Superquinn & Oceanpath
<i>Degree of Exclusivity of Relationship</i>	High /Low	<ul style="list-style-type: none"> <li>• Superquinn has no other supplier of fresh fish</li> <li>• Oceanpath is free to supply to other retailers</li> </ul>
<i>Degree of Dependence on Technology and Knowledge</i>	High	<ul style="list-style-type: none"> <li>• Superquinn is Oceanpath’s “bridge”</li> <li>• Superquinn needs Oceanpath’s expertise in seafood</li> </ul>
<i>Degree of Dependence for Strategic Development</i>	High	<ul style="list-style-type: none"> <li>• Superquinn’s strategic guidance led to Oceanpath’s status as top wet fish producers</li> </ul>

In using Carbonara’s (2002) parameters to assess the degree of collaboration between Superquinn and Oceanpath we can conclude ultimately that the relationship is a collaborative one. Having established this, we can examine in more detail the changes that have taken place within Oceanpath since it has become aligned with Superquinn.

### 7 13 Changes and Innovation in Oceanpath

‘The district leader often has a relevant role in the introduction of a modification. Production process automation, quality control, computer aided design are some of the activities that the leader firm tends to promote within its organisation and to require from its suppliers’ (Albino *et al.*, 1999). In addition, leader firms can promote new product development and the introduction of organisational change for example in the form of planning processes and operation management.

To examine the extent of change that Oceanpath has undergone since its inception we shall discuss it with regard to i) its production process, ii) its products, and iii) its

internal organisation<sup>13</sup> An assessment is made as to whether this change would have occurred in the absence of a relationship with Superquinn

### **7 13 1 *Changes in Oceanpath's Production Process***

When Oceanpath commenced production in 1995 it did so using simple and largely manual techniques. Fish would arrive at the (old) premises where it was initially refrigerated. When required, it was filleted, packed and labelled and then distributed. The quality checks were of a very basic nature – purely sensory and without any probing. When fish arrives at the premises now it is probed, the temperature is checked and the weights recorded and cross-checked against the weights that were expected. A computer based factory management system records all this data which is then kept on file. Tracer tags are then allocated to each box of fish. The tracer tag, if scanned, shows the temperature it has been stored at and where it has come from i.e. the name of the boat, co-op, fish farm etc. Although traceability has been a legal requirement since the 1<sup>st</sup> of January 2004 Oceanpath has had this system in place since 2002. For Superquinn, the ability to show where its fresh produce is sourced is of utmost importance. Under the agreed change and development plan this was a Superquinn requirement.

Once Oceanpath occupied its new facility in October 2002 its operation became much more automated. Prior to the move, salmon cutlets and skinless and boneless products for example, were produced manually. This process meant that filleters had to remove skin manually and pluck each bone by hand. At that time only 25,000 cutlets could be produced in a week. Since automation and the introduction of a skinning and boning machine, the number of cutlets produced in a week has increased to 120,000. The same numbers of filleters are employed now as when the process was manual, as they are required to prepare the fish for machine processing. A new packing machine has dramatically increased Oceanpath's output of pre-packed products. When packers had to cling-wrap products by hand approximately 1,000 to 1,200 packets were produced in a day. Since the introduction of the packing machine the same number of units can be produced in an hour. These improvements can be directly attributed to Oceanpath's

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<sup>13</sup> Interview with Ken Ecock of Oceanpath included questions on change and development in these three areas. See Appendix C for Oceanpath's interview questions.

partnership with Superquinn Superquinn required that output capacity be increased in order to cope with the demand of in-store promotions Rather than just stating its requirements, Superquinn lent its support to ensure the successful implementation of more automated processes by providing technical information via its other partners (namely its chicken partner, Cartan Brothers)

When questioned on the standard and type of processing equipment that has been installed in Oceanpath, BIM representatives commented that it was unusual for a firm of Oceanpath's size to have such high tech machinery

Related to changes in Oceanpath's production process, is the introduction of quality standards This has had implications not only for production but for internal organisation also as employment of a QA (quality assurance) manager was a Superquinn stipulation Accreditation to the BRC (British Retail Confederation) higher-level global food standard in July 2004 has superseded other quality assurance schemes such as Superquinn Hygiene that Oceanpath had previously operated under Having a BRC certificate means that Oceanpath is approved to supply retailers like Sainsburys, Safeway and Tesco as well as Superquinn As the only seafood processor in Ireland with this standard Oceanpath has acquired a distinct competitive advantage

Similarly the introduction of the IQS standard - a standard developed jointly with Superquinn and BIM - has also given them a competitive advantage As stated in Section 7.12.4 Oceanpath is the only secondary seafood processor to have acquired the standard

### **7.13.2 Product Changes**

In 1995 Oceanpath mainly produced white fish such as cod and haddock In 1998 it introduced tuna and swordfish and more recently it has introduced strawberry grouper Product changes have been influenced by changes in consumer taste - information on which is supplied by Superquinn market research In addition to these changes, Oceanpath has developed a value added range on the request of Superquinn Through a process of trial and error, products are invented and then given a three-

month trial period on Superquinn shelves. Depending upon sales levels the product is continued or withdrawn.

### **7.13.3 Organisational Change**

Organisational change within Oceanpath can be attributed to its accreditation to quality assurance standards. The “codebooks” in relation to quality practices specify certain actions in relation to general management practices, personnel management, factory management, production management as well as transport and systems management.

### **7.14 What Has The Partnership Meant To Superquinn?**

Superquinn has wet fish counters in all of its 19 stores. As Superquinn has grown so too has its ability to provide fresh fish. The category represents approximately 1.8 per cent to 2 per cent of Superquinn’s turnover. It therefore cannot justify a dedicated seafood buyer. However, without Oceanpath as a partner the seafood category alone would occupy 30 to 40 per cent of the Superquinn buyer’s time. As Oceanpath’s business relations manager does much of the work in relation to this category the Superquinn buyer is free to concentrate on his other categories, i.e. bakery and fruit and vegetables. “It’s like having a buyer without having a buyer” Brian Kelly (Superquinn Buyer) said referring to Oceanpath’s business relations manager.

The partnership has enabled Superquinn to have control over standard and quality of production without having to vertically integrate. The Superquinn–Oceanpath partnership could be described as quasi-vertical integration (Langlois and Robertson, 1995, p138). In the context of innovation Superquinn has been able to add expertise and knowledge specific to the fish processing industry to its distinctive competencies in retailing and marketing. We can conclude that there is a high degree of co-ordination integration without ownership integration.

## 7.15 Discussion and Further Analysis

The inter-firm relationships described in this chapter highlight the merits of co-ordinated rather than independent action. Co-ordination mechanisms outlined are varied and depend upon both the relationship type and the anticipated outcome of the relationship. Organic forms of horizontal co-operation amongst fish processors in Howth are co-ordinated purely on the basis of norms of economic behaviour which are both place specific and historical in context in that they have evolved over time through (local) social interaction. The degree to which these relationships (amongst fish processors) are co-operative are limited though none the less notable. Unlike the Italian industrial districts there is no evidence of flexible specialisation or resource sharing amongst processors. However, the creation of a climate of co-operative competition in which inputs are sourced having regard to all (local) processors needs demonstrates a collective approach to the sourcing of inputs. The means through which values and norms of behaviour are propagated is the *family*. All of the firms in Howth are family owned and have had a long association with a location on the pier. Additional attributes of this co-operatively competitive environment include the sharing of commercial information e.g. prices paid for inputs.

Aside from co-operative, non-transactional links there are real economic interdependencies between the firms due to the structure of the sector and the way in which firms diverge from pure processing (e.g. wholesale transactions between Oceanpath and Lett Doran) that reinforce their co-location from a logistical viewpoint.

Still attached to place, but not specifically, are those (vertical) relationships co-ordinated on the basis of repeated economic exchanges – both organically co-ordinated and informally created. In the case of the processor, Oceanpath, and the boats (local and non-local suppliers) co-ordination is based on sectoral norms of conducting business and a collective vision for the whole of the industry which endeavours to ensure that each actor along the supply chain stays in business.

Locally, vertical relationships (e.g. between the auction house and Oceanpath) have led to resource sharing i.e. sharing of refrigeration space. Such co-operation is co-



ordinated less on the basis of social trust and more on the basis of trust derived from repeated economic transactions. The sharing of resources is very much connected to their co-location, as ease of access to inputs is essential.

How the firms compete mean that there is scope for co-operation. Each of the firms has developed either product or market niches that enable them to co-operate with one another and at the same time avoid direct competition with one another. Uncertainty in terms of level and consistency of supply due to depleting fish stocks as well as quota limits mean that the only guaranteed supply is via aquaculture production. Through co-operation between complimentary processors (i.e. processors of shellfish and processors of white fish) sharing of supply has helped to keep the channels for obtaining wild species open.

Graduating to more conscious forms of co-ordinated co-operation is the vertical link between Superquinn and Oceanpath where a high degree of co-ordination integration is evident. Differing markedly from some of the leader firm – supplier relationships of the Italian Industrial districts, in particular the Benetton oligopoly where links with second and third tier suppliers are subject to unilateral controls - Oceanpath and Superquinn enjoy a collaborative, reciprocal and bilateral arrangement. On the one hand Superquinn has directed much of Oceanpath's strategic (automation, traceability, quality upgrading, value added production) and managerial functions (quality assurance manager) as in the Flagship model (Rugman and D'Cruz, 2000) while at the same time bridging the gaps in technical information by linking it to appropriate sources of knowledge (i.e. other Superquinn partners). Superquinn has been the source of external knowledge or the channel through which external knowledge has been received and which ultimately has led Oceanpath to innovate in a number of different ways e.g. automating, traceability, new product development (value added products). We suggest that Superquinn has significantly enhanced Oceanpath's configurational capabilities by providing financial support for the modification of production systems and attendance at trade fairs thus enabling them to pursue their second or third starter innovation strategy.

In stark contrast to an oligopoly where the power resides in the leader firm, Oceanpath has been able to, in the words of its business relations manager, “cash in”

on their association with the retailer and win new custom from other retail multiples, namely Dunnes Stores, EuroSpar and SuperValu

Langlois and Robertson (1995) argue that reciprocity in network relations is attributable to a high degree of ownership rather than co-ordination integration. They outline that in Japanese networks leader firms tend to hold a stake in their supplier companies. It is this financial commitment and 'interest in the prosperity of their suppliers' which acts as 'an incentive to engage in reciprocal cooperation'. With no ownership ties or even a contract to bind the firms as partners this case shows that the reverse is true. Despite huge resources - human, money and time - having been invested by Superquinn in Oceanpath, its reward for engaging in a reciprocal arrangement is not a share in Oceanpath's profits but rather an increase in its own due to a continuously improving, high quality wet fish counter in all of its 19 retail outlets. In effect it has acquired the benefits of vertical integration without vertically integrating - what may be termed quasi-vertical integration (Langlois and Robertson, 1995 p138). The blurring of boundaries between the two firms is engendered in specific actions, for example Oceanpath's business manager's alleviation of the Superquinn buyer's workload by 40 per cent or Oceanpath attending trade fairs under the name of Superquinn.

One would expect the co-ordinating mechanisms employed to regulate or govern the partnership to be "bureaucratic" (Grandori, 1997) in nature (i.e. contractual). Instead dyadic trust expressed in a number of different ways takes the place of a written contract e.g. through open book accounts on each side and reciprocal freedom to access each other's premises. Mutual monitoring in the form of fortnightly meetings and *liaison* activities (via telephone, e-mail and face to face interaction) between Superquinn's buyer and Oceanpath's business relations manager on a daily basis eliminates moral hazard and indicates a relationship co-ordinated on the basis of social means (Grandori, 1997).

The partnership emerged less because of close proximity to one another and more because of a history of inter-personal links between Superquinn buyers and one of Oceanpath's co-founders. However co-location has enhanced the degree of collaboration between the two firms as *ad hoc* meetings can be arranged speedily.

From Superquinn's perspective the motivation for partnership can be linked to a climate of uncertainty with regard to food safety. By opting for a single supplier it could control the standard of production giving it a competitive advantage over its retail competitors. Structural change in the industry (within the last 10 years) due to consolidation on the purchasing side in the fish-processing sector resulted in either the consolidation of processors or processors searching for ways of differentiating themselves. In industry life cycle terms the fish processing sector lies within the spectrum of steady evolution (see Section 2.4.7 in Chapter 2 for a description of this). To cope with structural change firms have been known to upgrade the quality of production or indeed automation levels (e.g. in the industrial district of Prato, Dei Ottati, 1996) but not without external affiliation. Without entrepreneurial vision on the part of Oceanpath's founders, the firm may not have coped with uncertainty and change in the manner that it has done and quite possibly may not have entered into partnership.

## Chapter 8: Inter-firm Relationships in the Printing Industry

### 8.1 Introduction

This chapter focuses on inter-firm relationships in the printing industry, in particular the relationship between four North Dublin based firms (i.e. Cahill Printers, Colourbooks, Coleridge Fine Arts and Smurfit Web Press, now Lithographic Web Press after a merger with Universal Lithographic) and one South Dublin based firm (Eurosreen, now E-Brook after a merger with Brookfield). These firms came together in February 2002 to form a strategic horizontal alliance in the form of a non-equity joint venture called the Printing Consortium of Ireland (PCI). The evolution of the relationship is traced i.e. the motives for the creation of the consortium, the environmental conditions leading to its development and its governance structures, paying particular attention to the role of interpersonal trust fostered through trade association participation. The performance of this co-operative venture is assessed. To give context to the inter-firm relationship a review of the sector in terms of industry performance, structure and history is presented.

The research questions are as follows:

- 1) In a climate of intense inter-firm rivalry and in a sector where (horizontal) inter-firm relationships have generally taken either one of two extremes viz informal referrals to competitors or horizontal integration in the form of mergers and acquisitions, how did five competing (i.e. horizontally aligned) firms collaborate to form a consortium?
- 2) How has a shared location contributed to the development and operation of the consortium?

## 8.2 Contingencies of Relationship Formation

Oliver (1990) performed a significant review of inter-organisational literature dating from 1960 to 1990 in which she revealed a number of critical contingencies of relationship formation. 'These contingencies are the causes that prompt or motivate organisations to enter into relationships with one another' (Oliver, 1990). Inter-firm relationships in this chapter are confined to horizontal alliances – an alliance being an agreement between two or more companies at a particular moment. A strategic alliance however, implies a long-term perspective in which there is a period of sustained interaction in the pursuit of common objectives (Pyka and Windrum, 2003). It is generally accepted that the underlying driver of inter-firm relationships, whether formal or informal, is firms' desire to attain competitive advantages that as individual firms they would be unable to achieve (Scherer, 2003, Ebers and Jarillo, 1997/1998, Porter, 1998).

Networks, which Scherer (2003) describes as alliances developed for, among other purposes, co-marketing, co-production and resource sharing can offer 'material benefits such as increased sales and/or lower costs and developmental benefits such as learning to adapt to changing economic environments'. An alliance is a specific form of inter-organisational network where each organisation retains control over its own resources but decides jointly on their use (Brass *et al.*, 2004). Rather than listing the motives for alliance formation in an *ad hoc* manner, Oliver (1990) has categorised the reasons for inter-organisational relationship formation under the following headings: necessity, asymmetry, reciprocity, efficiency, stability and legitimacy. These lend themselves readily to empirical application and can be used to trace the motives for the formation of the PCI.

Importantly, Oliver (1990) acknowledges that the 'decision to initiate relations with another organisation is commonly based on multiple contingencies' and may not be limited to one or other of the above. In addition to her proposed six generalisable determinants of inter-organisational relationships, Oliver (1990) outlines the facilitating conditions for the formation of six relationship types in each of the critical

contingencies. The most relevant of these relationships is joint ventures – the motives and facilitating conditions for the formation of which are outlined in Table 8.1

Through categorisation of motives Oliver (1990) implies but does not explicitly state a fundamental point, namely that alliances, in whatever form they take, i.e. equity joint ventures, minority equity alliances, bilateral contract based alliances or unilateral contract based alliances (Das and Teng, 2000), are driven by external factors generated in the wider economic and business environment that force firms to seek competitive advantages through relationship formation. It is apparent therefore that for each of the contingencies there exists a set of external conditions that prescribe firms' behaviour. These may vary significantly from industry to industry and cannot therefore be generalised. However, Grandori (1997) indicates a link between industry life cycle and inter-firm relationship formation that is not particular to industry type. She suggests that 'joint ventures are most frequently adopted in mature industries where it is critical to capture economies of scale and scope' (The role industry life cycle has to play in dictating specific types of actions is discussed in Section 2.4.7 in Chapter 2). Using empirical information, we can assess external conditions as they apply to the formation of the PCI.

### **8.3 Additional Consideration of Motives and Facilitating Conditions**

Oliver (1990) has, in exploring the determinants of inter-organisational relationships, implicitly incorporated two, conflicting rationales for the formation of strategic alliances i.e. the transaction cost rationale (Coase, 1937, Williamson, 1975) and the resource based rationale (Kogut, 1988 referred to in Das and Teng, 2000). In weighing up the most appropriate relationship type i.e. market, hierarchy or joint venture where increased efficiency is the motivation, the costs of monitoring, controlling and co-ordinating each are assessed with the lowest cost option pursued (Oliver, 1990). Where the motive for joint venture formation is reciprocity i.e. resource integration among firms, 'co-operative relationships [are] driven by a logic of strategic resource needs and social resource opportunities' (Eisenhardt and Schoonhoven, 1996 referred to in Das and Teng, 2000). The resource based theory of strategic alliances (Das and Teng, 2000) which can be traced back to the work of

Penrose (1959) is in part applicable to firms operating in the printing sector for reasons relating to the rate of technological change and the weight the industry attaches to the use of capital intensive resources such as the latest technology printing presses (property based resources) as well as technical and managerial systems (knowledge based resources) The emphasis is on value maximisation as opposed to cost minimisation (Pyka and Windrum, 2003)

What this indicates is that both the transaction cost approach and the resource based approach are valid analytical tools in the assessment of joint venture formation However, the choice of one rationale over another (as highlighted in the above paragraph) depends upon the particular motivations for joint venture formation

**Table 8 1** Motives and Facilitating Conditions for Formation of Joint Ventures

<b>Oliver's (1990) Six Contingencies and Facilitating Conditions For Formation of Joint Ventures</b>		
	<i>Motives</i>	<i>Facilitating Conditions</i>
<b>Asymmetry</b>	Enhance market power and improve competitive position against rivals	Threat of erosion of partners' competitive position is low
<b>Reciprocity</b>	Obtain synergies in technology or information sharing, Sharing of resources where scarce	All partners are on equal footing i.e. balanced bargaining position
<b>Efficiency</b>	Increase economies of scale and overcome capital restraints	Low cost of inter-firm relationship relative to market or hierarchy alternatives
<b>Stability</b>	Adaptive response to environmental uncertainty, Risks are shared	High risk in entering new market or engaging in new activities
<b>Legitimacy</b>	Enhance profile in industry	Needed for local legitimacy in host country or new market

To hedge against uncertainty and to create stability or predictability the creation of inter-organisational relationships is viewed as an adaptive strategy to environmental

uncertainty (Pyka and Windrum, 2003, Oliver, 1990) Dickson and Weaver (1997) found in their study of 433 Norwegian manufacturing firms that environmental uncertainty, which includes, *inter alia* a rapid pace of technological change and unpredictability of markets, led to the formation of alliances Brass *et al* (2004) indicate that in a climate of uncertainty pre-existing ties are particularly important, these can manifest themselves at the inter-personal and inter-organisational levels, which implies that the role of trust and a firm's reputation are factors in facilitating the creation of a co-operative alliance

### **8.3.1 Trust and Firm Reputation as Facilitating Conditions**

In inter-organisational network relations among individuals from different organisations there is a strong emphasis on "personalised" or social networking Oliver and Liebeskind (1997/98), with the same tone as Coleman (1990) and Granovetter (1985), believe that

'Exchanges take place within the context of socially established trust relationships such as those that exist among members of a close community, cultural grouping or profession. In these situations shared norms, common socialisation processes and information monitoring and sanctioning systems all engender trust which then serves as lubricant for economic exchange'

Brass *et al* (2004) distinguish between interpersonal trust and inter-organisational trust. They suggest that the creation of an alliance may be attributable to trust between individuals from different organisations but that the success of inter-organisational co-operation is dependent on trust between organisations. For example an individual in one organisation may trust another organisation but not an individual within that organisation. For the most part, relational trust underpins alliance formation and operation as parties 'use information from prior interactions to judge each other's reliability' (Brass *et al*, 2004). The nature of trust between the five PCI firms is examined in Section 8.9.

Firm reputation is an important element in the partner selection process in alliance formation. A firm with a positive reputation can instil trust and lead to inter-firm co-operation (Oliver, 1988). In the formation of horizontal alliances i.e. amongst



competing firms, a competitor firm's reputation for integrity and trust increases its attractiveness as a potential partner (Dollinger *et al* 1997) Depending on the theoretical standpoint the benefits of reputation can be construed in different ways i.e. as one of the key asset bases and a source of rent and profit (resource-based theory), as an element which adds value and transforms a zero sum game into a positive sum game (game theory), and as a mechanism for the reduction of transaction costs (transaction cost economics) (Dollinger *et al*, 1997)

#### **8.4 Structural Characteristics of Alliance Formations**

Governance structures of joint ventures are either equity alliances or non-equity alliances. An equity joint venture is 'an alliance form that combines resources from more than one organisation to create a new organisational entity (the child) distinct from its parents' (Currall and Inkpen, 2000). Non-equity alliances do not involve the transfer of equity nor do they usually entail the creation of a new organisation (Currall and Inkpen, 2000). Non-equity alliances can take many different forms and involve a mix of co-ordination mechanisms. What is common to all however is their "bureaucratic" nature i.e. formalisation through contractual relations (Grandori, 1997)<sup>1</sup>

Consortia, according to Grandori (1997), are bureaucratic networks due to their contractual nature. She adds that

'In horizontal relations, the consortium is a structural alternative to the association, allowing firms to pool similar or complementary resources, thereby, in the first place, instituting strictest quality control over access and thereafter, over the maintenance of quality and productivity standards'

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<sup>1</sup> See Table 7.3 in Chapter 7 for further detail on social and bureaucratic networks

## 8 5 Case Study Context

### 8 5 1 *A Brief History of Printing in Ireland*

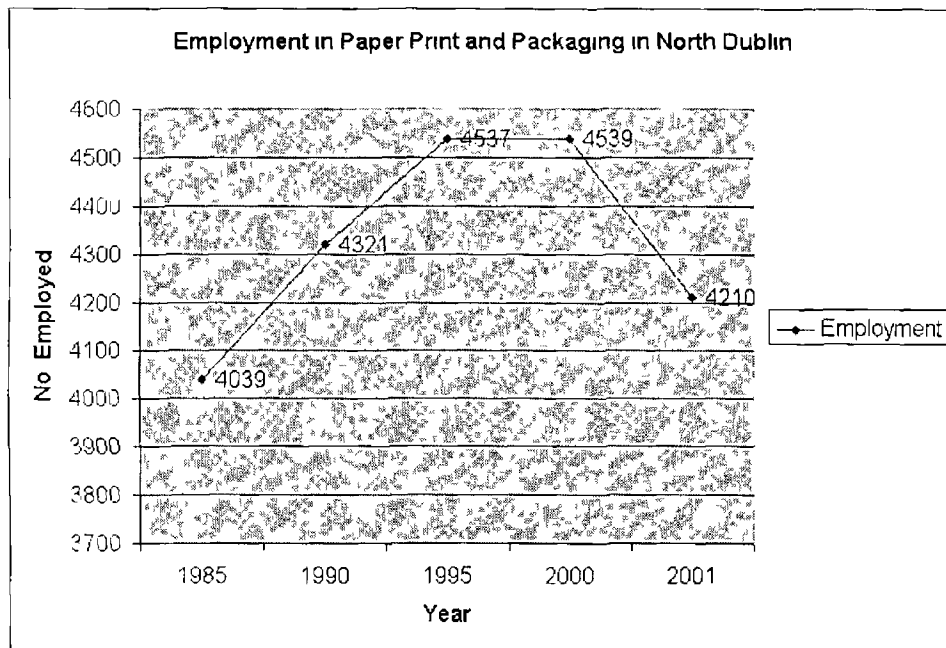
Printing is one of the oldest manufacturing sectors in Ireland (Tynan, 2002) although in European terms it is considered to be a late arrival, reaching Ireland a century after Johann Gutenberg's invention in Mainz<sup>2</sup> (Kinane, 2002 p7) In 1934 the School of Printing was established in Bolton Street Technical College, Dublin<sup>3</sup> where the Young Master Printers' Association was launched This saw a rise in the standard and quality of typography in Irish publications (Kinane, 2002 p35) In 1961 printing was the Republic of Ireland's fourth largest industry however technological advances such as computer typesetting and offset litho printing began to displace traditional letterpress technology These changes coupled with the oil crises of the 1970s led to several business failures (Kinane, 2002 p38)

'Irish printers have always been general jobbing houses' because there was never enough work to sustain any one specialist area of production (Kinane, 2002 p39) An exception to this arose in the ten year period from the mid-1980s the mid-1990s when a specialist area – software manual printing – came to the fore This specialisation can be directly attributed to the very high demands created by the presence of foreign owned subsidiaries of software companies (Section 3 4 2 in Chapter 3 describes the software manual printing industry in more detail) In general, however, the rise in employment in the industry in 1990s (see Figures 8 1 and 8 2) can be attributed to changes in printing technology that allowed for economic production of short runs

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<sup>2</sup> This took place in the 15<sup>th</sup> century  
Now called Dublin Institute of Technology (DIT), Bolton Street

**Figure 8 1** Employment in Paper Print and Packaging in North Dublin from 1985-2001

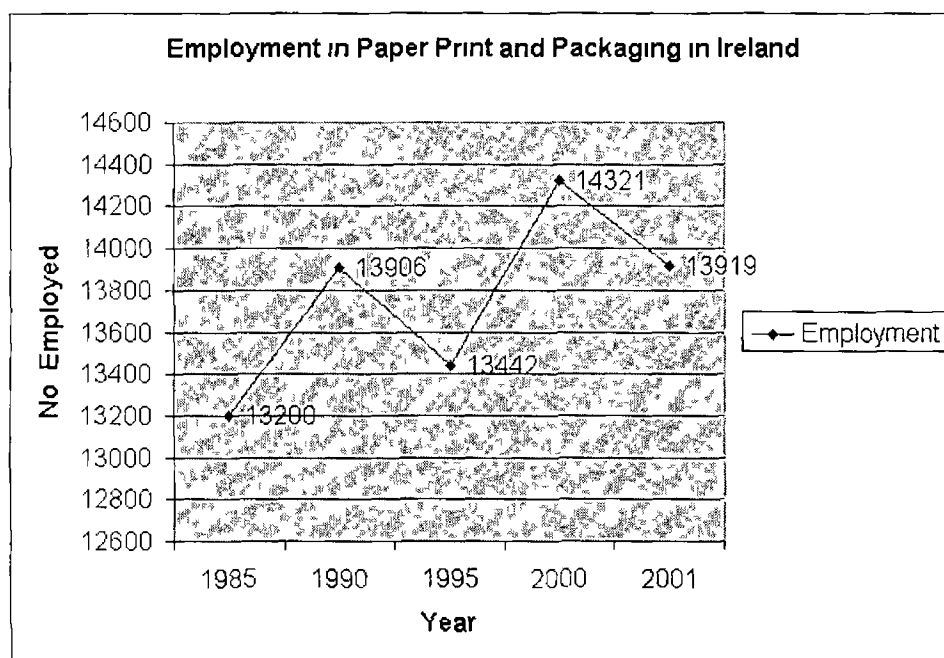


Source: Forfás Unpublished Employment Data

### 8 5 2 Concentration of Employment and Firms in North Dublin

Although we are concerned with firms in the printing industry, classification of activity it is difficult to pinpoint due to the large degree of overlap in firms' core business. In other words firms' activity can be described using more than one NACE code. To outline the degree of employment concentration across firms in North Dublin relative to the nation we have included all relevant NACE codes i.e. 2112 to 2225 in the calculation of location quotients (see Table 8 3 below). We have also distinguished between the concentration of indigenous and foreign owned industry.

**Figure 8 2** Employment in Paper Print and Packaging in Ireland from 1985-2001



*Source Forfas Unpublished Employment Data*

Table 8 2 clearly shows the strength of concentration of employment and number of firms (indigenous and foreign owned) in the paper, print and publishing sector in North Dublin Table 8 3 shows that there is a high concentration in individual sub-sectors but that these are confined to indigenous firms What these data tell us, most importantly, is that there is a history or sustained period of concentration in North Dublin relative to the nation

Additional figures, presented in The Print and Packaging Forum's recently commissioned study of the industry (McKeown, 2005), indicate that 54 per cent of people employed in the paper, print and publishing industry are located in Dublin McKeown (2005) suggests that this relatively high concentration of employment in Dublin is most unusual given that on average only 23 per cent of all manufacturing employment is located in the region

**Table 8 2** Concentration of Employment (as measured by location quotient) and Number of Firms in Paper, Print and Publishing (NACE 21-22) in North Dublin 1985-2001

	<b>Location Quotient for Indigenous Industry</b>	<b>No of Indigenous Firms</b>	<b>Location Quotient for Foreign Owned Industry</b>	<b>No of Foreign Owned firms</b>
2001	2.72	71	2.75	6
2000	2.83	72	2.60	6
1995	3.11	69	2.44	7
1990	2.67	69	2.44	7
1985	2.27	79	2.59	7

*Source: Own Calculations Based on Forfas Unpublished Employment Data 1985-2001*

**Table 8 3** Pattern of Concentration (as measured by location quotient) of Key Indigenous Paper, Print and Publishing Sub-Sectors<sup>4</sup> in North Dublin

<b>NACE Code</b>	<b>Description</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2001</b>
		<i>Location Quotients</i>				
2112	Manufacture of paper and paperboard	3.73	3.39	3.73	2.24	2.28
2121	Manufacture of corrugated paper and paperboard and of containers of paperboard	2.62	3.27	3.62	3.40	3.46
2123	Manufacture of paper stationery	2.11	3.34	4.80	5.31	5.03
2213	Publishing of journals and periodicals	2.72	3.03	4.20	4.03	3.85
2222	Printing n e c	2.37	2.92	3.37	3.20	3.09
2223	Bookbinding and finishing	7.90	6.70	8.59	8.00	7.37
2224	Composition and plate making	2.39	4.70	6.50	7.24	6.77
2225	Other activities related to printing	5.08	4.69	5.82	3.83	3.98

*Source: Own Calculations Based on Forfas Unpublished Employment Data 1985-2001*

<sup>4</sup> Key printing sub-sectors are those that have a location quotient above one and where employment is spread across three or more firms. LQs for foreign owned sub-sectors are above 1. However, employment is confined to just one or two firms in each and they have therefore been omitted.

### 8 5 3 *Importance of Industry*

Amongst indigenous firms in North Dublin paper, print and publishing is the biggest employment provider, accounting for 21.3 per cent of employment (Forfas, unpublished employment data, 2001). When combined with employment in foreign owned firms the industry accounts for 9.53 per cent and stands fifth in terms of employment provision in the region. Nationally, 18,858 people are employed in the industry (CSO, 2003), which accounts for 5 per cent of total employment.

### 8 5 4 *Firm Size*

Table 8.4 shows the size of firms in North Dublin i.e. the average number employed per firm. We can see that indigenous firms have been, since 1985, predominantly small to medium in size<sup>5</sup> while foreign firms have been consistently medium in size. The size of print firms in Ireland and their comparatively small scale of operations, when compared to European print firms (McKeown, 2005), are highlighted as a motivating factor in the formation of the PCI (see Section 8.10).

**Table 8.4** Average Size of Firms (Indigenous and Foreign Owned) in Paper, Print and Publishing (NACE 21-22) in North Dublin 1985-2001

Year	Average Number Employed per Firm	
	<i>Indigenous Firms</i>	<i>Foreign Owned Firms</i>
2001	49	121
2000	52	137
1995	54	118
1990	51	117
1985	41	110

Source: Forfas Unpublished Employment Data

### 8 5 5 *Industry Trends*

In discussing industry trends we focus primarily on the printing sector, as it is this sector to which each of the five PCI firms belong.

<sup>5</sup> Medium sized firms employ between 50 and 249

‘The paper print and packaging industry in Ireland is poised at a crossroads between a traditional craft based manufacturing sector and an emerging modern, computer based, multimedia industry’ (McKeown, 2005)

From an industry life cycle viewpoint this statement indicates that the printing sector is a maturing industry in the midst of a “creative destruction” phase to use Schumpeter’s famous expression (see Section 2.4.7 in Chapter 2)

In a study commissioned by FAS<sup>6</sup> on the print and paper industry, Colin McIvor Associates (1994) highlighted the changing structure of the industry. In doing so, they predicted the following

‘A decrease in the size of the computer manual printing industry, a slowdown in the growth of parts of the packaging sub-sector, a decline in the independent pre-press sub-sector as the work is increasingly brought in-house by firms within and outside the print and paper sector, an increase in the level of overseas ownership’

In addition to these anticipated changes, they highlighted the continuing impact of changing technology on skill and manpower requirements as well as production processes. Most importantly, they signalled a change in business definition i.e. a shift in focus from the preoccupation with product, service or process to understanding issues related to customer types and needs and ways of delivering value to customers. These predictions were made within the context of the prevailing market conditions in the mid-1990’s. For the most part, these predictions have been realised.

Regarding the decline of the software manual printing industry in the late 1990’s and the shift from printed manuals to ‘the more common provision of manuals as files (for example Acroread files) on the CD ROM’ (Jacobson and Mottiar, 1999), firms had to engage in a process of re-invention – a process which had taken place following the arrival of subsidiaries of software MNEs in Ireland almost a decade earlier. Prior to their arrival, the printing of software manuals in Ireland was entirely

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<sup>6</sup> FAS is Ireland’s national training and employment authority

non-existent. Some firms were more successful in their re-invention efforts than others and managed to tap into the printing of CD booklets.

According to Breege Kennedy (Interviews 2003, 2004), an Enterprise Ireland development advisor for print and packaging firms, the demise of software manual printing meant that firms incurred huge losses having invested in technology to service the specific needs of this market (i.e. asset specific investment as per Williamson, 1975). Uncertainty surrounding market conditions led firms to adopt a culture of change management that involved a restructuring of internal organisation. This restructuring process placed the customer relationship manager in a pivotal role and saw the demise of the managing director as the individual performing all the tasks i.e. HR manager, sales manager and production manager (Kennedy, Interview, 2003).

The degree to which technology has shaped and changed, and will continue to shape and change, the structure of the industry cannot be overstated. Technology can be categorised into 1) Pre-press Technology and 2) Printing Technology. Changes in the former technology have resulted from improvements in computing and telecommunications and are causing the re-configuration of the industry by removing certain tasks from the printing realm. The latter is technology that is improving and widening the range of production processes within the sector and increasing the range of tasks that print firms are able to perform. Table 8.5 summarises some of the changes in pre-press technology and their impact on the printing sector. Table 8.6 distinguishes between the various types of production processes employed in Irish printing firms and the merits of each. Linking the pre-press and printing functions and improving the management of both is information and communication technology (ICT). Developments in ICT have transformed the platform upon which these elements are managed from a traditional, mechanical one to a technology based one (McKeown, 2005).

The net effect of these technological changes is that a high degree of specialisation is required as not all printers can perform all tasks. We can see from Table 8.5 that there are a number of different processes that can be employed in a printing firm and that a shift from one to another (or an addition of any) of them would involve large investment. The problem is that in Ireland there is a relatively low level of



specialisation amongst printing firms partly due to the demise of software manual printing. This has culminated in a set of industry specific weaknesses – either low usage level of some technologies or inappropriate investment in others (McKeown, 2005)

Technological change has meant that firms have had to adapt and modify the way in which they produce outputs. According to McKeown (2005) the high rate of adoption of new technology, such as modern printing presses, has made a ‘significant contribution to the current level of over capacity in the print sector’. Firms’ continued investment in new printing presses is fuelling over capacity and exerting pressure on margins and profits (McKeown, 2005, Kennedy, Interview, 2003)

**Table 8 5** Changes in Pre-press Technology and the Impact on the Printing Sector

Type of Technology	Change Incurred	Impact on Printing Sector
<i>Pre-Press Technology</i>		
<i>Page Make up systems</i>	Replacement of professional systems with entry-level page make up and typesetting systems in form of personal computer Available to many workers in all industries	Increasing amount of page layout and typesetting undertaken but moved out of sector into publishing
<i>Scanners</i>	Colour scanners, used for colour separations involve highly computing intensive process Price/performance ratio falling	Specialist firms no longer required as investment in capability means it can be performed in-house
<i>Digital Cameras</i>	Eliminating need for scanning	Computerisation is required

Sources: McIvor Associates (1994), McKeown (2005)

What the above serves to highlight is that there is large degree of uncertainty within the printing sector

## 8 6 Catalyst for Change

Jacobson and Mottiar (1999) noted a lack of horizontal co-operation amongst firms in the software manual printing industry despite a declining market. The reason for this they highlighted was unwillingness amongst executives to share information with one

another and the tendency for them to 'keep their cards close to their chest' (Jacobson and Mottiar, 1999) Similarly, in other sub-sectors of the printing industry horizontal co-operation has been negligible (Kennedy Interview 2003, Byrne Interview, 2003) due to a resounding 'air of secrecy' and the 'fear of losing out to competition' (Tynan, 2002) In theoretical terms, co-operation failed to emerge due to the risk of opportunistic behaviour to which high quasi-rents are attached (see Sections 7.4.2 and 7.4.3 in Chapter 7 for further explanation)

Throughout the 1990s changes in a specific market serviced by the printing sector took place that caused Irish print firms to concede market share to their European counterparts The introduction of new tendering procedures for government contracts meant that any contract over the value €139,311.85 had to be put to tender and advertised in the Official Journal of the European Communities (OJEC) The implications of this were that barriers to entry were created as individual Irish firms lacked the scale and diverse range of skills and services to compete against European firms

## **8.7 Motivation for PCI Formation**

Through entrepreneurial vision on the part of five managing directors the PCI was established with the express purpose of winning a greater proportion of European contracts Using Oliver's (1990) contingencies for the formation of joint ventures (See Table 8.1) we can identify the motives for the formation of the PCI as *asymmetry, reciprocity, efficiency and stability*

Market conditions were such that the Irish share of large public printing contracts was at or near zero and between 40 to 60 per cent of all public (including non-printing) contracts were awarded outside of Ireland (Tynan, 2002) Individually, the five member firms would have been unable to attain a share in this market However, collectively they were able to build market power and compete against their European counterparts The creation of asymmetry as a motivating factor in the formation of the inter-firm relationship is thus apparent With zero market share, these firms had zero power in the market for large public printing contracts

**Table 8 6** Major processes used in the Printing Industry in Ireland

Type of Process	Characteristics	Merits/demerits
<i>Lithography</i>	Dominant production process, Automatic plate changing, automatic wash ups and ink profiling have improved this traditional process	Along with CTP addresses short run lengths, Reduction in turnaround time, reduction in viable run lengths
<i>Web Offset Presses</i>	Two types cold set & heat set, Cold set used for newspapers, Heat set used for magazines/brochures	Long run lengths with high quality
<i>Gravure</i>	Web-faced process	High speed production of large print runs of consistent top quality
<i>Flexographic</i>	Used in long run work by newspapers – will be superseded by cold set	Suitable for long run work, Replaced by digital label printing
<i>Digital</i>	Digital machines gradually replacing sheet-fed processes	Efficiencies for short-run, opportunities to add value for customers with personalisation
<i>Finishing</i>	Post-press e.g binding, warehouse and despatch	Little investment in this area by printers and lack of technical innovation by suppliers means that it is an afterthought instead of important part of production process

Source: McKeown (2005)

The alliance provides them with an immediate means of competing in this market, and, as the first mover among Irish firms, may set up barriers to entry for any subsequent Irish firms wishing to enter the larger market. They have clearly gamed market power over their Irish competitors. The asymmetry in this context is with respect to other Irish firms. In the broader context, the alliance is means of offsetting the pre-existing asymmetry in market share and market power in comparison to their European competitors.

The managing director of Colourbooks highlights the motivation of reciprocity in the following statement: ‘With the consortium we have all the packages available, from

web printing, digital printing to perfect binding. If we're printing a job on a web press, but the cover doesn't suit that procedure then one of our members can handle it. You have to be able to offer a complete service if you wish to tackle the European market' (Tynan, 2002). The firms were motivated by a desire to obtain synergies in technology and information sharing (as per Oliver, 1990). The contributions of each firm to the consortium can be viewed in Figure 8.3.

Individually, the five firms did not have the scale to compete against European firms. However, when resources (physical and human) were combined, efficiency was created that enabled the removal of entry barriers. Arguably the efficiency motivation could also lead to expansion or merger as alternatives to an alliance. However, the alliance is a much more immediate means of attaining the benefits of scale than expansion. And the alliance, through the joint venture, is actually a partial merger, one that has the advantage of leaving each of the firms in the alliance with autonomous governance.

The motivations for the creation of the joint venture can also be attributed to the firms' desire to create stability. In other words the joint venture can be viewed as an adaptive response to environmental uncertainty (Oliver, 1990).

It is clear that the motivations for the creation of the PCI stem from a particular set of market conditions specific to the printing sector. Market conditions alone however did not trigger the creation of the PCI. Environmental conditions such as the rate of technological change and internal conditions (within firms) such as the lack of efficiency (in terms of scale) and a diverse range of skills (knowledge) and technology in production processes (property) combined to create a climate where firms had one of two choices: either co-operate to prosper or compete against one another and run the risk of reduced margins and profits. These conditions can be attributed, in part, to the stage of the printing industry's life cycle.

Using Lei and Slocum's (2005) categorisation of industry life cycles<sup>7</sup> we can place the printing sector in the mature "creative destruction" quadrant where the rate of technological change is high, 'new technologies or ways of serving a customer dramatically redefine the nature of the product or service offered to customers' and

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<sup>7</sup> See Sections 2.2.4.7 in Chapter 2 for further detail on industry life cycle.

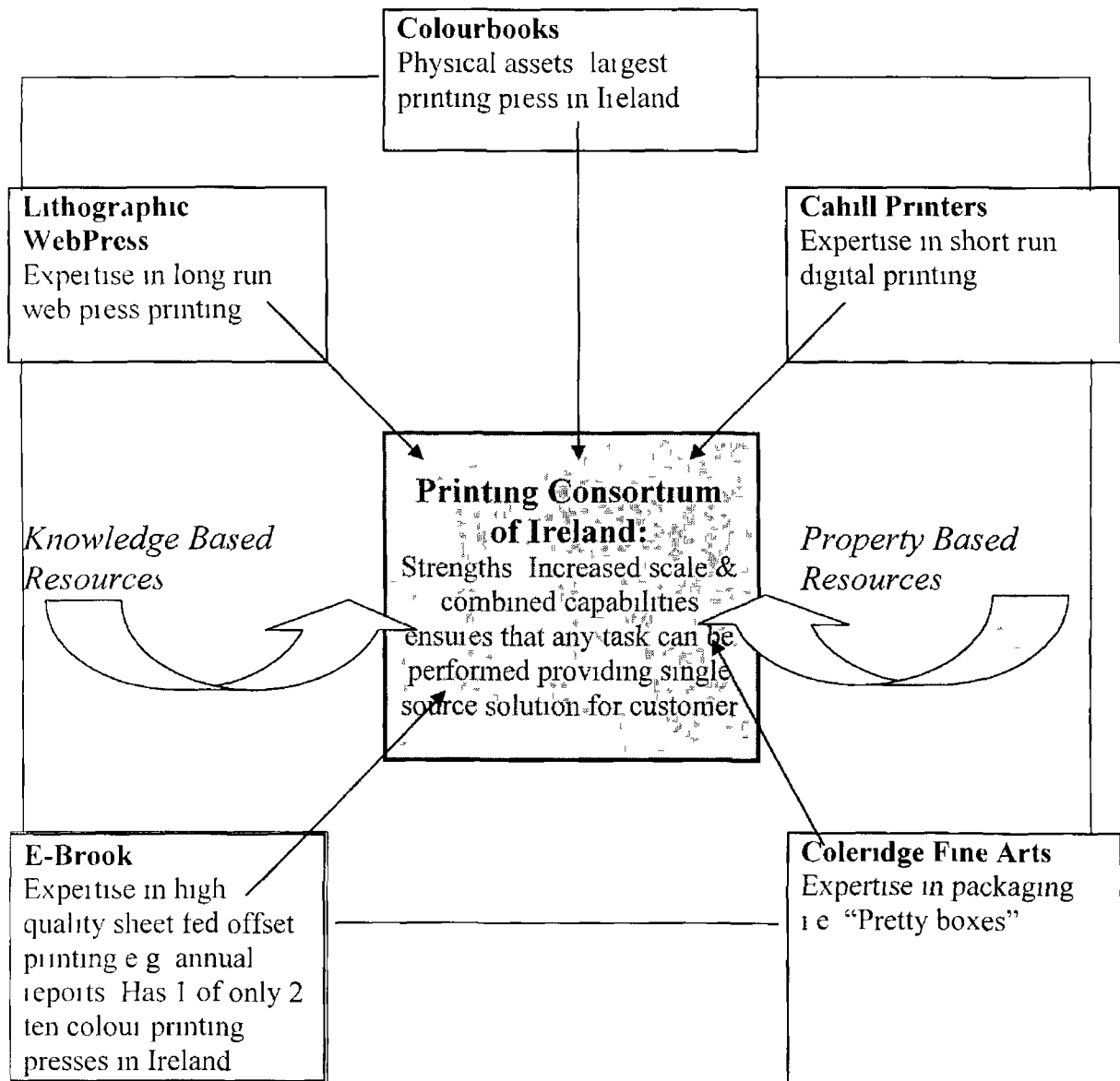
'established firms face market share loss' They outline the strategic requirements for competing in such an industry ecosystem and identify successful firms as 'concept learners' i.e. firms that 'harness change to create new value propositions' Joint ventures and strategic alliances, Lei and Slocum (2005) further suggest, are important vehicles for concept learners especially when partners possess important related technologies (Figure 8.3 shows the technology (property) and expertise (knowledge) of each of the PCI firms and how they have been combined to create synergy)

## **8.8 Origins of the PCI**

The five printing firms (See Table 8.7 for a profile of each) formalised the Printing Consortium of Ireland (PCI) in February 2002 by appointing Lorcan O'hObain (previously the managing director of Cahill's Printers) as its managing director. For two years prior to formalisation the PCI had existed informally and operated in an *ad hoc* manner. Prior to formalisation the managing directors of four of the five firms – Cahills, Colourbooks, Lithographic Web Press (then Smurfit Web Press) and E-Brook (then Euroscreen) – had co-operated to win large government and public contracts. This co-operation was characterised by a high degree of inter-personal trust amongst the four managing directors and the consortium (primarily a sales function at the time) was co-ordinated on the basis of such trust. (Section 8.9 below describes how this trust came about.)

Using Grandori's (1997) interdependence typologies and network forms (See Section 7.5 and Table 7.3 in Chapter 7) the PCI (in its original state) can be classed as a social network that was consciously constructed. The reciprocal interdependency amongst these four print firms is the same as that of informal industrial district sub-contracting in that *social* rather than *bureaucratic* means were employed to co-ordinate the firms' activities (Grandori, 1997). In other words, relational contracting was favoured over written rules and safeguards inherent in contracts.

**Figure 8 3** Firms' Key Capabilities (Property and Knowledge Based Resources) and Their Contribution to the Printing Consortium of Ireland



Source: Analysis of O'Kobain Interview data (2004)

### 8 9 Trust and the PCI

The initial basis for trust cannot be attributed to repeated transactional interaction i.e. dyadic or networked trust (Lorenzen, 2001/2002) as the firms are horizontally rather than vertically aligned and are thus similar to one another or manufacture complementary products and would therefore not have had economic interactions with one another unless in a sub-contracting capacity (In this case, however there was no history of such interdependence between the four original PCI member firms)

Over time trust has been reinforced by repeated transactional exchanges via informal sub-contracting (The role of trust in facilitating co-operative processes is discussed in more detail in Section 2.4.3 in Chapter 2)

**Table 8.7** Profile of PCI Member Firms

<b>Company Name</b>	<b>Year Est'd</b>	<b>Location</b>	<b>Firm Size<sup>8</sup> /No Employed</b>	<b>Type of output</b>
<i>Cahill's Printers</i>	1866	East Wall Rd, North Dublin	Medium, 134	Government and public contracts
<i>Smurfit Web Press (Now Lithographic Web Press)</i>	1991	Glasnevin, North Dublin	Medium, 99	Magazines, catalogues, brochures
<i>Colourbooks</i>	1989	Baldoyle, North Dublin	Small, 37	Bookbinding and Finishing
<i>Linoscreen (Now E-Brook)</i>	1977	Ballymount, South Dublin	Medium, 55	Annual Reports, Magazines
<i>Coleidge Fine Arts</i>	1980	Malahide Rd, North Dublin	Medium, 50	Box manufacturing for mobile phones, pharmaceuticals

Despite the range and mix of contingencies motivating the formation of the PCI it would not have been created without trust as a facilitating mechanism. We outlined above in Section 8.8 that trust was based on inter-personal connections between the managing directors of four of the PCI firms. The question therefore is how did such trust come about? In industrial districts i.e. communities of common value systems, communication, co-operation and trust are promoted and understood as an important source of competitive advantage (Dwivedi *et al*, 2003). Within the printing sector in general and in North Dublin a common value system also exists but in contrast to those depicted in the industrial districts literature, the core values promoted are secrecy and rivalry – both of which have prevented co-operation from taking place in the past. Given such a value system the generation of trust amongst MDs from competing firms is even more intriguing.

<sup>8</sup> Micro firm employs less than 10 people, small firm employs between 10 and 49, Medium firm employs between 50 and 249, large firm employs 250 people and above

A sub-system for the creation of common values is engendered in the industry representative organisation – the Irish Printers Federation (IPF) – that acts as a vehicle for characteristic, institutional and knowledge based trust. The IPF is the representative organisation for the printing industry and is part of the umbrella body IBEC (Irish Business and Employers Confederation). Within the IPF there is an executive council to which members are elected and over which one member is elected to preside. All four MDs have served together on the council of the IPF at various different times over the last 20 years and the current president is the MD of E-Book. Repeated social interaction in an institutional environment (representative organisation) has played an important role in fostering trust and co-operation in the case of the PCI. It has been suggested however that ‘knowledge, institutions or even common characteristics, automatically do not get translated into trust’ (Dwivedi *et al*, 2003). Instead a process of trust formation is thought to be involved which can include repeated interactions and close ties that develop after a trial period (Dwivedi *et al*, 2003). The period prior to formalisation of the PCI contract could be considered the trial period. Through joint service on the IPF council (rather than mere membership of the federation) the MDs had repeated dealings with one another and a common background was established upon which a mutual understanding was developed. Through personal interaction the MDs acquired extensive knowledge of one another – further instilling the basis for trust.

This is somewhat similar to the way in which trust emerged in the Torc network of furniture firms (as discussed in Section 2.4.3 in Chapter 2). Despite the absence of spatial proximity Heanue and Jacobson (2001/2) reveal that trust amongst firms was generated by virtue of *inter alia* a shared institutional environment.

The degree of inter-personal trust can be gauged using specific measurement techniques e.g. ‘the frequency of agreements done on a ‘handshake’ without written documentation’ (Currall and Inkpen, 2000). Application of such a technique to assess the level of joint venture trust at the inter-personal level in the PCI reveals a high degree of trust. Prior to formalisation, all forms of co-operative interaction amongst the four firms were conducted in the absence of written documentation. Despite the creation of a formalised governance structure in 2002 – embodied in a three page contract binding the firms as partners and including the appointment of a managing



director to oversee the PCI's operation – the consortium operates largely on the basis of individuals' "word" rather than any formal contractual stipulation. By definition, once a contract was made the network shifted from being "social" to "bureaucratic" (Grandori, 1997). Given the reciprocal nature of the interdependencies amongst the PCI firms such bureaucracy is characterised by relational contracting that combines contract with unwritten rules and safeguards (Grandori, 1997).

## 8.10 Formalisation Process

Formalisation of the consortium was spurred by two events. The first of these was the decision by Cahill's MD to leave the company and establish his own consultancy firm, this led to him offering to manage the consortium and operate it in a less *ad hoc* manner. This triggered a second event – the need for a fifth member to complete the range of services that the consortium could offer. The appointment of a managing director and the introduction of a new member meant that certain details needed to be recorded in writing so as to avoid any later dispute and ensure the successful and smooth running of the joint venture (O'hObain Interview, 2004). The agreement specifies among other things the following rules of play: the MD's remuneration, that firms are bound to the consortium for a minimum of 12 months<sup>9</sup> and that six months notice is required in order to withdraw from the alliance.

The recruitment of a fifth member – Coleridge Fine Arts – certainly spurred the formalisation process and altered the dynamic of the PCI Trust amongst the four original managing directors was based on a mix of characteristic (social), knowledge and institutional based trust fostered through joint participation on the council of the IPF. The basis for selection of the fifth member was in the words of the PCI MD "the firm's reputation and whether they could be trusted". A number of firms had the required capabilities according to the PCI MD but could not be trusted. Repeated exchanges via formal sub-contracting between one of the original member firms and the new, fifth member firm provided the initial basis for trust. Over time and through repeated collaborations on contracts a greater degree of trust has emerged as a by-product of economic interaction.

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<sup>9</sup> There tends to be a six to nine month sales cycle and for this reason firms have to sign up for a minimum of 12 months.

## 8.11 PCI Operation and Co-ordination

Every six weeks the MDs of the five member firms meet for two hours to exchange information. When interviewed the MD of the PCI suggested that 'the personal side [of the meeting] is very important' (O'hObain Interview, 2004) reinforcing the notion of relational exchange in building trust. The PCI MD actively seeks tenders and contracts over the value of €200,000 (and not below this level). In formulating a tender the PCI MD requests that each of the member firms submit quotes to him for whichever element of the contract they wish. Any of the member firms can veto the consortium bidding for a contract. Firms may wish to veto a contract because they have a pre-existing relationship with the client/customer and feel that they could, as an individual firm, maintain the business. However, the chances of obtaining the contract are greater if the five firms, through the consortium, bid for the contract. This is due to the fact that 'individually each company may not have a diverse enough range of skills to compete in the EU market' (Tynan, 2002).

For each contract a lead contractor (one of the member firms) is appointed. Within that lead firm a manager is then appointed and he/she delegates parts of the contract to the other four member firms. The decision to appoint a lead contractor is taken by the PCI MD and is based on a range of factors e.g. whether or not the firm has a pre-existing relationship with the client.

Grandori (1997) would describe such a network, as a 'structured, differentiated and integrated type of consortium' because different sub-processes are involved that are technically separable so as to 'assign tasks and reward rights to the different firms'. At the same time she emphasises that in such cases 'firms are linked by various interdependences and the achievement of an integrated output of the desired quality in the desired time typically involves the co-ordination of programmes and reciprocal adjustment' (Grandori, 1997). In terms of co-ordination mechanisms this involves a wealth of inter-firm planning that includes interaction between the various different line managers in each of the member firms. The extent of interaction required means that information and knowledge (know-how) about certain processes and technology are transferred from one firm to another and as a direct result of collaboration a learning process can take place. Das and Teng (2000) note that 'joint ventures

provide the best opportunities to acquire partners' tacit knowledge and other knowledge based resources'

## **8.12 Advantages of Co-operation**

The resource based rationale for joint venture formation emphasises 'value maximisation of a firm through pooling and utilizing valuable resources' (Das and Teng, 2000). According to Barney (1991) 'a firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously implemented by any current or potential competitors'. As the PCI is the only such network of print firms (in Ireland) to combine their collective resources and co-operate to win large contracts it is reasonable to consider the alliance in terms of a vehicle for the creation of value – a vehicle that provides a single source solution.

The PCI is now self-sufficient in that it does not require funding from any of the member firms. When the PCI MD submits a tender, he totals the members' quotes and adds on a certain amount. This surplus is then made available for his management fee and for market research (which the consortium has commissioned on Northern Ireland and Belgium).

The primary advantage of co-operation is the winning of large contracts that would otherwise be won by foreign competition. By joining forces, contract bids "work out at around eight to 20 per cent cheaper than if the firms were to bid individually" (O'hObain Interview, 2004). Additional benefits have, however, evolved over time, with the co-ordination efforts of the PCI MD. These include joint purchasing and benchmarking that have enabled efficiency to be created (cost savings) and a source of information (market) to be established. When not co-operating with one another on consortium bids the firms have developed sub-contracting relations with each other that each member exploits when it is operating to over-capacity and other members are not. These repeated transactional exchanges further enhance the climate of trust amongst the five firms and serve to further embed inter-firm relations.

In terms of joint purchasing the firms have achieved cost savings of 10 per cent on heating oil for example. Through benchmarking, firms are able to access information on the cost of inputs such as paper, board, inks and plates. Each of the firms submits their input costs to the PCI MD who then relays the cheapest price to all the member

firms. This is done without disclosing the firms' identities. The MD, when interviewed, commented that his third party co-ordination of benchmarking enables the diffusion of accurate information while at the same time through non-disclosure of identities sensitive information is not disclosed indiscriminately.

### **8.13 The PCI - An Industrial District?**

In Chapter Seven we discussed the collective action characteristics of industrial districts (Section 7.4.1 to 7.4.2) and evidence of them in the fish-processing sector in Howth (Sections 7.7 and 7.10). We also discussed the heterogeneous and dynamic nature of industrial districts (Section 7.3) and the shift from organic co-operation to more structured or consciously constructed forms of collaboration (Sections 7.4.2 to 7.5). Bearing in mind these discussions we can relate elements of the PCI network of firms to industrial districts – in particular new and emerging configurations of industrial districts such as the *gruppi* phenomenon.

Despite a general climate of secrecy and rivalry within the printing sector, the PCI represents a collective approach to the solution of an industry wide problem. Although the firms usually compete against one another, they “co-operate for the good of the industry and in the national interests of producing goods that would ordinarily be produced abroad” (O’Hobain Interview, 2004). This collective action is characteristic of firms’ behaviour in Italian industrial districts.

#### **8.13.1 Italian Gruppi**

The way in which the PCI member firms have configured themselves for the purposes of winning large contracts is similar to that of firms in Italian industrial districts. Within industrial districts, production is organised in such a way that firms specialise in a particular element or stage of the production process. These firms are called stage firms. Through informal sub-contracting relations or indeed formal ownership ties these firms are linked to “final firms” that oversee or co-ordinate the production of goods (Dei Ottati, 1996). The term used to describe such an arrangement is *gruppi*, i.e. business groups or groups of firms. ‘By groups of firms, we mean a stable collection of firms bound together by economic and social ties (such as subcontracting relations and kinship ties among entrepreneurs) which create an atmosphere of mutual loyalty among persons working in them’ (Dei Ottati, 1996). The constellation of firms is

linked either by ownership, recurring subcontracting or commercial agreements (Paniccia, 1998)

The operation of the PCI is such that one of the five member firms acts as a “final firm” in order to co-ordinate production and assign tasks to each of the four “stage firms” As in the operation of *gruppi* in the textile district of Prato in Italy (Paniccia, 1998), the spread of competencies is taken into consideration when parts of the production plan are being assigned to the four stage firms

Dei Ottati (1996) suggests that product diversification and upgrading led to organisational restructuring and the emergence of new governance mechanisms such as *gruppi* and leader firm (see Section 7.6 in Chapter 7) arrangements in the industrial district of Prato in Italy throughout the 1980s Dei Ottati (1996) further suggests that a new competitive context is responsible for the rise in the group phenomenon in Prato At one time market conditions were such that a limited number of products could be produced in a manner that did not require continuous improvements in quality When faced with new conditions on both national and international markets that entailed both ‘product diversification and quality upgrading’, there was ‘call for a coordination of the various specialised activities of different firms closer than the coordination of the past’ (Dei Ottati, 1996)

Product diversification and improvements in quality require investments – investments that carry risk An organisational structure was required that protected parties against increased risk and the increased uncertainty in final markets ‘The grouping phenomenon provides a suitable device to meet precisely those needs’ (Paniccia, 1998) These groups may only amount to an informal arrangement in which firms maintain their autonomy Such a grouping can be just as effective as formal arrangements (where ownership ties are created) as investment in personal reputation is made

Like firms in the industrial district of Prato, the PCI firms were faced with a new competitive context that warranted organisational restructuring so as to hedge against loss of market share According to our interviewees (Byrne, 2003, Kennedy, 2003, O’Hobain, 2004) print firms are no longer just about printing As all firms have access to the same technologies, firms’ distinguishing features are the service they

provide, the way in which value is added and the delivery mechanisms employed. As a business group, the PCI tackles each of these areas by providing a unique service i.e. single source solution, by combining the technical strengths of each of the member firms synergy is created and value added and by joining forces varied and flexible delivery mechanisms are employed depending upon client needs.

In Italian industrial districts both historical and technological factors have played a significant role in the development of co-operation amongst firms that specialise in different phases of the production process (Panizza, 1998). The difference between production in the Irish printing sector and production in Italian industrial districts is that in the former there is no history of flexible specialisation whereas in the latter it is prolific. Moreover, production in the Italian industrial districts has been characterised by close family and other social inter-relationships between owners and workers that is distinctly absent in Irish production. In Ireland, however there have been suggestions that common institutional contexts (as with the Torc network of furniture firms) are an alternative to the personal, social or familial environment of the Italian industrial districts. These differences are not as significant as one might think – especially in the context of recent evidence that suggests such aspects of the environment in Italy are of diminishing importance in the evolution of districts' structures.

Despite these differences the formation of the PCI – a business group – can be attributed to the same set of factors that have influenced the development of Italian *gruppi*, namely history and technology. The PCI cannot be described as an organic mode of co-operative interaction but rather a consciously constructed one that shares characteristics with the Italian *gruppi*.

Jacobson *et al* (2001 p98), in their description of Co. Monaghan's furniture industrial district note the presence of the following 'close proximity, competition as well as formal and informal co-operation, close inter-firm relationships – both horizontal and vertical' which they emphasise are also the characteristics of Italian industrial districts. Although we have no evidence of vertical co-operation within the print sector in North Dublin, the way in which the consortium of horizontally aligned firms (the PCI) operates is such that production is divided amongst the firms in a vertical manner. This could be classed as vertical co-operation of sorts. In light of this

Jacobson *et al s* (2001) description of the furniture industrial district is applicable to the PCI

#### **8 14 Assessment of PCI Performance**

Performance of strategic alliances can be measured using a variety of techniques. These range from profitability to alliance longevity (Das and Teng, 2000). The approach favoured by Das and Teng (2000) is to assess the degree to which the agreed objectives of the alliance have been achieved. In the words of the PCI MD and referring to profitability, the joint venture has been “moderately successful” to date – winning contracts to the value of €2,200,000. However, due to the scale of the projects and/or the delivery requirements Irish companies, bidding individually, would not have won any of these tenders – the importance of which should not be underestimated.

The types of contracts undertaken have raised both the profile of the consortium and its member firms. High profile contracts in the PCI’s portfolio include the Ordnance Survey Ireland (OSI) contract. This contract, amongst others, has raised the consortium’s profile both nationally and internationally which further serves to strengthen co-operation and ensure continued collaboration.

The agreed objectives of the PCI were to tender for and win both European and Irish public and government contracts that were being lost to foreign competition. These objectives have been fulfilled in so far as contracts have been won that otherwise would have been awarded outside of the state. However, as noted by the PCI MD, it is hoped that a greater volume will be achieved in the future.

#### **8 15 The Role of Location**

The co-location of print firms meant that the owners of the firms knew each other personally or by reputation prior to the PCI formation. Their spatial proximity to one another has facilitated the co-ordination of the alliance’s physical operation e.g. arrangement of meetings, on-site visits (sharing of information) and the co-ordination

of finishing and delivery logistics. The degree to which firms, and in particular MDs of the firms, knew and trusted one another cannot, however, be attributed to a shared location. Instead, trust was fostered in a shared organisational environment rather than a spatial one. Through joint participation and service in the industry's representative organisation – IPF – relational exchange led to interpersonal trust. It is possible therefore, in theory, for the five PCI firms to have been geographically dispersed and to have forged an alliance – a theory that the PCI MD himself suggested at interview. We know that spatially dispersed networks can exist provided there is organisational proximity amongst the network members (Heanue and Jacobson, 2001/2002)

## 8.16 Discussion

To begin our discussion we return to the first of the two research questions posed in Section 8.1. It should be noted that these questions have been answered in the main text of this chapter and that what follows is merely a summary of the analysis so as to provide greater clarity.

We asked how five competing firms collaborated to form a consortium (the PCI) given that the particular contexts within which they operated were not conducive to such co-operation. In other words there was a prevailing climate of rivalry and distrust and distinct lack of precedence for inter-firm co-operation that was thought to inhibit collaborative processes. As highlighted in section 2.4.3 of Chapter 2 rivalry is thought to render firms incapable of co-operation (Lazerson and Lorenzom, 1999).

In answering the above question we examined the motivations for the formation of the PCI as well as the facilitating conditions. We found that market conditions were a significant factor in driving the creation of the PCI but environmental conditions such as the rate of technological change and internal conditions (within firms) such as lack of efficiency (in terms of scale) and a diverse range of skills (know-how) and technology in production processes (property) combined to create a climate where firms had one of two choices: either co-operate to prosper or compete against one another and run the risk of reduced margins and profits. We have attributed these conditions, in part to the stage of the printing industry's life cycle. In maturing



industries, for example, it is thought that joint ventures are pursued so as gain economies of scale and scope

We found that the resource based theory of the strategic alliances is applicable to firms operating in the print sector for reasons relating to the rate of technological change and the weight the industry attaches to the use of capital intensive resources – i.e. property based resources as well as knowledge based resources. Such theory converges with one of the motivations for the PCI formation - reciprocity. Where the motive for joint venture formation is reciprocity i.e. resource integration among firms, co-operative relationships are driven by a logic that combines strategic resource needs and social resource opportunities.

Using Giandori's (1997) terminology we identified additional motivations for joint venture formation. These were asymmetry, efficiency and stability. Without facilitating conditions, such as the pre-existing inter-personal trust fostered through joint trade association participation, the motivating conditions alone would not have led to a successful joint venture formation. This follows the thinking presented in the literature that relational trust underpins alliance formation and operation.

The fact that the print industry is a mature sector at a "crossroads" that may well re-define the very nature of production and service provision has created a climate of uncertainty and risk. Alliance formation has facilitated the sharing of risk by combining capabilities and resources to tackle declining market share. Co-operation has not only led to fulfilment of alliance objectives i.e. the winning of large contracts (that Irish firms tendering on an individual basis, would not have won), but has created an environment for additional mutual benefits such as information sharing and cost savings on input purchases. Key to the success of collaboration is the third party co-ordination efforts of the PCI managing director who oversees the consortium's operation and facilitates information sharing.

In comparing the PCI to the Italian industrial districts we identified some shared characteristics, namely the way in which the PCI firms have organised themselves in a group formation or *gruppi* so as to respond to changing market conditions. Like firms in industrial districts, the PCI firms operate on the basis of stage firms and final firms – the former are responsible for various elements of the production and the

latter co-ordinates the various stages of production and assembles the final product. Despite a general climate of secrecy and rivalry within the printing sector, the PCI represents a collective approach to the solution of an industry wide problem. It is this collective action that is characteristic of firms' behaviour in Italian industrial districts.

Our second question then asked whether or not a shared geographic location had contributed to the development and operation of the PCI. The cluster literature emphasises the importance of geographical proximity for the development of co-operative relationships. Although the five firms are spatially proximate to one another in that they are all located in Dublin<sup>10</sup>, the development of trust cannot be attributed to a shared location. Trust was the outcome of inter-personal exchanges and joint service of the member firms' managing directors on the IPF council. In theory, therefore, co-operation could have taken place between spatially dispersed firms. A shared location, however, has contributed to the smooth operation of the consortium's activities i.e. production and delivery.

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<sup>10</sup> Four firms are located in North Dublin and one firm is located in South Dublin.

## **Chapter 9 Inter-firm Relationships in the Bakery Sector**

### **9.1 Introduction**

This chapter is concerned with the nature of inter-firm relationships in the mature sector of bread, fresh pastry goods and cakes (NACE 1581) also known as the bakery sector. Characterised by a deep sense of rivalry and secrecy at both the firm and supporting organisation levels, the bakery sector comprises mostly stand-alone firms i.e. firms whose transactions are conducted at arms length and co-ordinated by the market. We ask therefore, why co-operation has failed to emerge in the industry generally and specifically among the spatially concentrated group of firms in North Dublin. For answers we examine the industry's composition, its history, structural changes and the extent of organisational change.

### **9.2 Theory**

Before we detail and analyse our empirical data it is necessary to outline some theories that offer explanations as to why co-operation fails to occur and what it is about specific industry characteristics that preclude collaboration. We hypothesise that, among other things (a discussion of which follows), the values of secrecy and rivalry have inhibited the development of co-operation in the bakery sector. The industrial district literature provides convincing evidence for the role of non-economic forces such as conventions and norms in shaping industrial development. These are however, portrayed in the majority of cases as having a positive rather than negative effect on the development of co-operation. Advanced forms of co-operation found in the Italian industrial districts are thought to be underpinned by the social community, which upholds supportive sets of values (see Section 2.4.1 in Chapter 2). What has been suggested however, in a small minority of cases is that the reverse is also true (see Section 9.5.1 below), in other words that non-co-operation is maintained by a social community, which upholds values of opportunism, rivalry and/or destructive competition (Paniccia, 1998).

Conventions in this sense do not refer to an agreement, as in a formal contract or explicit rule, 'but rather in the sense of a *common context*' in which actors operate (Storper, 1997 p16) 'Conventions emerge both as responses to and as definitions of uncertainty [and] become an intimate part of the history incorporated in behaviours (Storper, 1997 p16) Storper (1997 p19-20) suggests that for an economic actor the *framework for foreseeable action* is defined by convention. The implication of this is that a 'multiplicity of worlds of production' exist as convention is dependent upon uncertainty in a given industry or location. There are, in other words, a number of *possible worlds of production*. Furthermore, the conventions of participation dictate the normal ("norms") or usual forms of action that an individual or firm will use when interacting with other individuals/firms in an economy. As conventions are rooted in 'recurrence or precedent' (Storper, 1997 p16) and shaped by uncertainties, the relevance of historical and structural factors to explain present day phenomena is thus apparent.

In addition to the role played by conventions in shaping the type of inter-firm relationships that will emerge in a given industry and location, factors that can inhibit the development of co-operation include the way in which firms compete with one another. In Chapter 7 we discussed the role of co-operative competition among fish processing firms in Howth and how it has led to information sharing and a collective approach to the sourcing of inputs due to specialisation. Competition may not however always be constructive. As indicated in Section 2.4.5 in Chapter 2 competition based on price can have destructive consequences. Our reasons for focusing on price competition relate to the fact that historically this has been the way in which bakeries compete with one another (see Section 9.5.3 below).

Competition based on price can be destructive in that profits may be reduced to such a degree that businesses are no longer viable. This can be attributed to large firms for example, that obtain monopoly power by employing 'predatory practices', the aim of which is to destroy those with less market power (Dei Ottati, 1994). Moreover, competition based on price can form an obstacle to innovation as profits and wages are reduced which in turn reduces the financial resources for investments and the willingness on the part of workers to collaborate (Dei Ottati, 1994).

Competition is closely intertwined with conventions and rules of play in that tacitly accepted rules can transform a destructive competitive environment into a constructive one (see Section 9.5.1 below). Local customs and in particular norms of reciprocity are helpful in this process, however the intervention of 'formal institutions' (i.e. associations) to prevent competition from degenerating into destructive forms has been used in the textile district of Prato, Italy for over 40 years. Associations can promote other forms of competition based on product quality, production mix, terms of delivery, organisation of sales, after sales assistance etc.

What this suggests is that in order to guide firms away from price competition it is necessary for "institutional thickness" to be present within the region (As discussed in Section 2.7 in Chapter 2 the absence of this can form a barrier to cluster formation and indeed co-operative processes that are a constituent part of clustering). We indicated in Section 2.7 (Chapter 2) that supporting organisations must be integrated and focus on collective representation and common purpose so that barriers to cluster formation can be broken down. In the absence of such institutional thickness a significant barrier is created, as firms need supporting organisations for things that cannot be generated internally or obtained from other companies. In Section 9.5.2 we show that the supporting organisations in the bakery sector do not portray a united front nor do they operate in any integrated manner. Furthermore, there exists an internal conflict among the association's (the FCBA) members (i.e. large firms versus small firms) that limits the extent to which collective representation can be made.

As discussed in Chapters 2 (Sections 2.7 and 2.10.3) and 7 (Section 7.6) a large firm in a local or regional area can organise production among groups of smaller firms, can expand existing markets and diffuse knowledge from sources external to the region or nation. These firms are known as leader firms. The presence of a large firm in a local economy however, does not always have positive ramifications for the small firms to which it sub-contracts elements of production. Through the introduction of formalised standard supplier linkages that preclude relational contracting, knowledge transfer to small firm suppliers (via learning through interaction) is negligible (Boschma and Lambooy, 2002). Furthermore the leader firm has been linked to the emergence of hierarchy and the introduction of oligopoly power (Harrison, 1994). The presence of

such a leader firm would further serve to inhibit co-operative processes as power structures are such that non-reciprocal arrangements obstruct symbiotic exchanges (Boschma and Lambooy, 2002) We suggest that a large firm (Cuisine de France) in Dublin is further inhibiting co-operative processes by entering into short-term sub-contracting agreements with small bakeries (See Section 9.7 below for further discussion)

We hypothesise that the failure of co-operative inter-firm relationships to emerge in the bakery sector is attributed to the inter-play of the factors outlined above We focus therefore on the conventions (rules of play), historical and structural contexts, the nature of competition, the role of supporting organisations and the role of large firms

### *Empirical Data and Analysis*

#### **9.3 Industry Composition**

The structure of the bakery industry varies from country to country as well as by category The bread sector comprises craft bakers, plant bakeries, chain bakeries and in-store bakeries (*Leatherhead Food International*, 2003) Plant bakers produce sliced and wrapped bread using economies of scale to produce goods with high efficiency (i.e. speedily and at a low per unit cost) Craft bakers operate relatively small-scale production facilities with low profit margins More recently master/craft bakers have carved out niche markets in specialty breads

In Ireland, plant bakers account for 85 per cent of bread production, while craft bakers represent in the region of five per cent of sales The remaining 10 per cent of the market – that comprises part-baked frozen bread which is generally baked off in in-store bakeries – is dominated by the IAWS Group owned Cuisine de France (*Food Ireland*, 2003) In Europe, however, craft bakers predominate, accounting for 62 per cent of the European bread market, with plant bakers, in-store and chain bakeries accounting for the remaining 38 per cent (*Leatherhead Food International*, 2003)

The Sectoral Development Committee (SDC) in their report and recommendations on the Irish bakery industry (1990) highlighted the degree to which large firms dominate

the market, an observation that the National Prices Commission (NPC) also made in their 1975 study of the industry ‘by far the most striking and important feature of the bakery industry is the extent to which it is dominated by the larger firms’ The NPC (1975) also noted that these large bakeries tended to be located in major towns and cities but in particular, Dublin Table 9 1 shows the degree of concentration (of employment) in North Dublin relative to the nation

**Table 9 1** Location Quotients and Number of Firms in the Manufacture of Bread, Manufacture of Fresh Pastry Goods and Cakes (NACE 1581), 1985-2001

	<b>Location Quotient</b>	<b>No of Firms</b>
2001	1.33	9
2000	1.70	9
1995	1.25	8
1990	1.08	15
1985	2.13	17

*Source* Own calculations based on Forfas Unpublished Employment Data 1985-2001

### 9.3.1 *A Declining Industry*

The decline of the bakery industry is evidenced in the number of firm closures and general employment decline Table 9 1 shows the fall in firm numbers in North Dublin while Table 9 2 highlights the declining employment levels both nationally and in North Dublin

In its 1975 study, the NPC indicated that ‘the 22 largest firms which represent eight per cent of the firms in the industry produced more than 64 per cent of all bread consumed in the country’ The SDC (1990) note that ‘by 1985 the 22 largest firms had reduced to 20 who produced 58 per cent of all bread consumed By 1989 only 18 major firms were operating and between them they accounted for 80 per cent of all bread consumed’

**Table 9 2** Trends in Number of Employed (Full-time) in the Manufacture of Bread, Manufacture of Fresh Pastry Goods and Cakes (NACE 1581) from 1985 to 2001 in North Dublin and Nationally

	1985	1990	1995	2000	2001
<b>North Dublin</b>	1,494	454	425	521	346
Percentage change in employment in period		-143.7	-6.4	22.6	-33.6
<b>National</b>	5,567	3,759	3,245	2,949	2,529
Percentage change in employment in period		-32.5	-13.7	-9.1	-14.2

Source: Forfas Unpublished Employment Data 1985-2001

### 9 3 2 Key Players in the Industry

The industrial bread market remains dominated by a small number of large firms – Biennan’s, Irish Pride, Pat the Baker, Readibake and Dunnes Stores Baking Group<sup>1</sup> (Garvey, Interview, 2005, *Food Ireland*, 2003). Table 9 3 shows the size (in terms of employment) and location of some of these firms. The strength of these groups can be attributed to, 1) the closure of other large bakeries throughout the 1990s and 2) their direct (through take-overs) or indirect (through hidden directorships etc.) ownership of new or existing bakeries. These five firms are described as ‘the five key groups’ of the Irish bakery industry (*Food Ireland*, 2003). It is important to note however that between two of these firms there are hidden ownership links. Joe Brennan, owner of Biennan’s is also the owner of Readibake and his daughter is the firm’s managing director. Within the Readibake group there are an additional three bakeries – Johnston Mooney & O’Brien, Peter Lyons, and Doyle’s bakeries. Through Readibake Ltd, Brennan’s control these three bakeries. Table 9 4 shows that these were some of the top Irish Bakeries in the 1980s (SDC, 1990). Irish Pride, once jointly owned by IAWS Plc (that owns Cuisine de France) and IAWS Co-op is now totally owned by the co-op. Irish Pride, however is still associated with the IAWS Plc in that its parent company the co-op holds a 17 per cent stake in the public company. Irish Pride bakeries own a number of other bakeries that were also key players in the 1980s. See Table 9 4 below for further details.

<sup>1</sup> Neville’s bakery in Macroom, Co. Cork was part of the Dunnes Stores baking group before its closure in July 2003.



### 9 3 3 *Explaining Bakery Closures*

The closure of large bakeries in the 1980s can be attributed to the removal of government retail price maintenance and bread subsidies to bakeries. These were introduced in the late 1970s to protect the bread industry 'from the combined impact of declining consumer demand and changing trends in retailing of consumer food' (SDC, 1990). Despite changing market conditions the industry remained a significant employer 'with over 9,000 persons employed in bakery establishments in the Republic of Ireland in 1982' (SDC, 1990). Following the withdrawal of subsidies between 1985 and 1986 bread prices fell and caused the number of plant closures to accelerate.

'For example of the 43 plants which closed in the period 1982-1986 involving a loss of 1,792 jobs, two plants alone accounted for 1,338 jobs lost. Overall employment in the bakery sector fell over the period 1979 to 1986 from 9,424 to 7,339, even though 1,444 additional jobs resulted from expansion or new firms starting up in the same period' (SDC, 1990).

The rationalisation process peaked in the period 1987 to 1989 when a further 22 plants closed and an additional 1,370 jobs were lost. Overall employment in the industry fell from 9,131 in 1982 to 4,726 in 1989 (SDC, 1990). The demise of smaller bakeries can be attributed to the emergence of modern plants 'dedicated to producing large volumes of standard (800gm) bread' (SDC, 1990). Neville Bros (Dublin) Ltd, suppliers of standard wrapped bread to Dunnes Stores is thought to have influenced the direction of the industry through their joint promotion of 'low priced

**Table 9 3** Size of Key Firms and Plant Locations

<b>Key Players</b>	<b>Location of Plants</b>	<b>Total Number Employed</b>
<i>Brennan's</i> <sup>2</sup>	South Dublin Walkinstown North Dublin Finglas & Clonsilla	300
<i>Pat the Baker</i>	Letterkenny, Donegal Oranmore, Galway Castleisland, Kerry Limerick Granard, Longford Kilkenny Cork City South Dublin Cherry Orchard	418
<i>Irish Pride</i>	Tralee, Kerry Limerick Waterford Mayo Portlaoise Cork	430
<i>Cuisine de France</i>	South Dublin Tallaght Galway Cork	500

Source *Kompass (2005)*

generic branded product' (SDC, 1990) The relationship between Neville Bros (Dublin) Ltd and Dunnes Stores is shrouded in secrecy like so many other inter-firm relationships (See Section 9 5) The degree to which ownership ties are hidden among firms in the industry is indicated in the following quote from the SDC report (1990)

'Dunnes Stores, with its 43 branches, has a share of about 15 per cent of the bread market and is *reputed* to own a modern Dublin Bakery, Neville Bros (Dublin) Ltd' (emphasis added)

The removal of subsidies alone did not contribute to the number of plant closures throughout the 1980s Per capita bread consumption, which declined at a rate of 0 9 per cent per annum from 1952 to 1984 (SDC, 1990), has played a significant role in the decline of the industry The volume (see Table 9 5) and value (see Table 9 6) of the Irish bread market has however shown signs of improvement and growth According to Leatherhead Food International (2003) Irish bread consumption is slightly below the European average at 66 5 kg per capita In 1989 the per capita

<sup>2</sup> Brennan's includes Johnston Mooney and O'Brien, Readibake, P Lyons and Doyle's

**Table 9 4 Relationship Between Top Irish Bakeries in the 1980s and Three of the Five Key Groups in the Irish Bakery Industry (2005)**

<b>Top Irish Bakeries in 1980s<sup>3</sup></b>	<b>Post Consolidation &amp; Current Status</b>
Brennan s, Dublin	Established a second company Readibake Ltd
Johnston Mooney & O'Brien, Dublin	Now owned by Brennan's through Readibake Ltd
Peter Lyons Drogheda	Breannan's, through Readibake, bought 50% stake in P Lyons P Lyons then sold his share to Readibake after 10 years of trading
Doyles, Dublin	Biennan's through Readibake own Doyles Bought from Doyle Hotel Group in 1990s
Western Pride, Balhnrobe	} Part of Irish Pride (an associate of IAWS Group)
Kiely s Tipperary	
Fitzgeralds, Coik	
Keatings, Kanturk	
Williams, Taghmon	
Keanes, Limerick	
Biennan's, Bandon	
Leydon House	
Pat the Baker, Granard	Still operating
Nevilles, Macroom	Closed July 2003

Source SDC (1990), Garvey, Interview (2005)

consumption of bread was 66 kg This indicates that the bread (sliced pan) market is static The amount spent on bread however is relatively high at €107 3 per capita 'as bread is regarded as a semi-luxury rather than a basic staple food, so consumers tend to purchase more specialities for indulgence, taste and better quality' (*Leatherhead Food International*, 2003)

<sup>3</sup> These are some of the top Irish bakeries according to the Sectoral Development Committee's (SDC) Study of the Irish Bakery Industry (1990)

**Table 9 5** Irish Bread Market by Volume 1998-2002

1998	1999	2000	2001	2002	Percentage per annum change 1998-2002
'000 tonnes					
236	248	249	250	252	1.6

*Source: Leatherhead Food International (2003)*

**Table 9 6** Irish Bread Market by Value

2001	2002	Percentage per annum change 2001-2002
<i>Euro Million</i>		
387	406	5.1

*Source: Leatherhead Food International (2003)*

It is interesting to note that 'Ireland has recorded the highest growth in volume and value terms as a result of continuous product development based on convenience and the introduction of continental varieties. Indeed, the snacks sector has increased by 22 per cent since 2001, with both Ciabatta and bagels driving this category' (*Leatherhead Food International, 2003*). Not surprisingly it is the key players within the industry that dominate this new market.

What these changes suggest to us is that standard bread is an inferior good while speciality breads are normal goods. This is consistent with the changes in the wider economic environment brought about by the Celtic Tiger i.e. population growth and rapid income growth.

Table 9 7 below displays the value of the various elements of the bakery market i.e. bread, cakes and biscuits and shows that in all cases imports greatly exceed exports.

**Table 9 7** Overview of Irish Bakery Market in 2002

	<b>Size of Market</b>	<b>Imports</b>	<b>Exports</b>	<b>Irish Industry Output</b>
<i>Bread &amp; Morning goods</i>	€406m	€56m	€18m	€368m
<i>Cakes</i>	€140m	€80m	€1m	€61m
<i>Biscuits</i>	€229m	€156m	€108m	€181m
<i>Total</i>	€775m	€292m	€127m	€610m

*Source CSO 2003 Leatherhead Food International (2003)*

#### **9 4 Structural Changes**

With the emergence of larger scale, high technology bakeries such as Neville Bros Ltd in the late 1980s smaller bakeries were unable to produce standard bread competitively. This spurred the smaller bakeries to broaden their range to include specialities for local (rather than national) markets and to outsource their requirements of standard bread from plant bakers that were able to produce bread more efficiently due to economies of scale. As a result of these changes a two-tier structure emerged in which a small number of large bakeries dominated the national market and a large number of small bakeries catered solely for the local market (SDC, 1990, Garvey, Interview, 2005)

The emergence of in-store bakeries further changed the nature of the bakery business. Initially, in-store bakeries such as Superquinn competed against, and in some cases put out of business, the high street baker (craft baker) (Garvey, Interview, 2005). Through interviews with a number of North Dublin bakeries (See Table 9 8 for details) it became apparent that in-store bakeries formed the basis of a new market to which they could sub-supply part-baked produce (that was then later baked-off in-store)

The arrival of Cuisine de France (located in Tallaght, South Dublin) in 1990 “revolutionised the bakery industry” (Garvey, Interview, 2005) through its introduction of part-baked products to the Irish market and its sub-supply relationships with existing (local and national) small bakeries. Small bakeries in

North Dublin had one of two choices – supply to Cuisine de France or compete against them. Of the four firms interviewed, all supply to Cuisine de France. Section 9.7 below outlines how these sub-supply relationships have had minimal effect on organisation within firms and negligible effect on promoting co-operative practices.

**Table 9.8** Size and Age of North Dublin Firms<sup>4</sup>

Firm Name <sup>5</sup>	Year Established	No. Employed
<i>Firm 1</i>	1950	35
<i>Firm 2</i>	1988	45
<i>Firm 3</i>	1988	25
<i>Firm 4</i>	1887	100

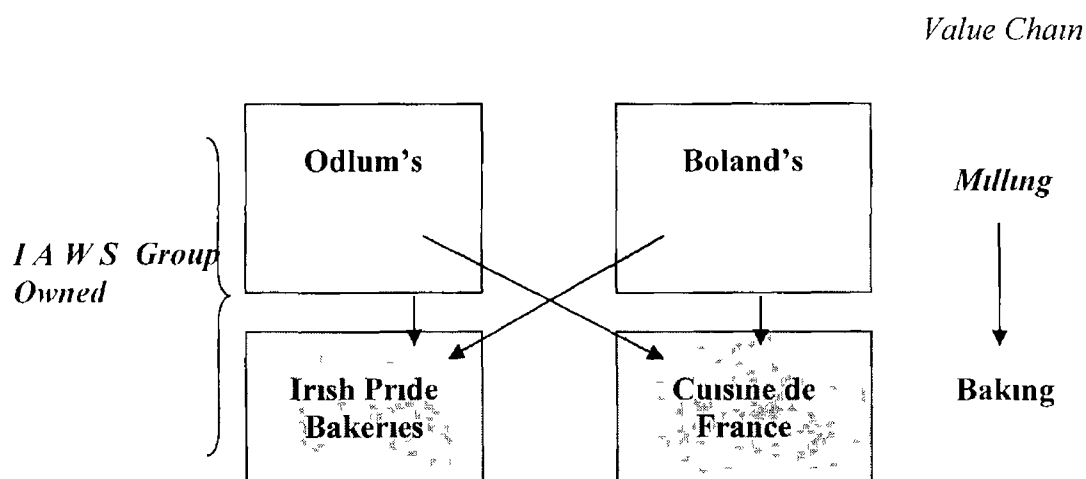
#### 9.4.1 *Linkages in the Value Chain*

There is a strong history of interconnectivity (i.e. ownership) within the different elements of the bakery value chain for example between millers and bakers. The SDC (1990) notes that while the majority of bakeries in 1975 and 1989 were privately owned, Ranks (I) Ltd owned three bakeries in 1975 through a subsidiary company. The Odlum group for a short time owned Johnston Mooney and O'Brien and Downes & Son Ltd until 1988 and 1989 respectively. The Greencore Group and IAWS group now jointly own the Odlum Group. The IAWS group, through one of its member firms – Shamrock Foods – owns Boland's Mills. Odlum's and Boland's are the only millers in the Republic of Ireland and therefore dominate the supply of flour within Ireland. Figure 9.1 shows IAWS Group involvement at both the milling and baking stages of production. Through Odlum's and Boland's the IAWS group controls the market for the supply of flour in Ireland. This means that all bakeries (craft and plant) sourcing flour in Ireland do so through one or other of these IAWS owned subsidiaries. Figure 9.1 also shows the significant presence that the IAWS group has at the next stage of production – baking. It should be noted that the Irish Pride group comprises six bakeries (see Table 9.4). The presence of a large corporate group such as IAWS at both the milling and baking levels means that they are able to harness a great deal of market power within the industry.

<sup>4</sup> Only the firms interviewed have been included in this table.

<sup>5</sup> For confidentiality reasons it is not possible to disclose the identity of the firms.

**Figure 9 1** Relationship Between IAWS Owned Millers and Bakers



## 9 5 Rivalry Rather Than Co-operation

'Neither does a common background necessarily imply co-operation, as a basic value may be non-co-operation. Even in areas where many of the features of the communitarian model are present, co-operation is not a preferred strategy' (Panizza, 1998)

Through interviews with key industry personnel i.e. trade association representatives, development advisors in the indigenous development agency<sup>6</sup> and directors of bakery operations it emerges that a basic value under which all bakeries operate is a keen sense of rivalry and secrecy. From our basic preliminary inquiries (initial interviews) to more detailed investigations (semi-structured and structured interviews) these values were repeatedly highlighted as factors inhibiting successful co-operation. Interviewees were not prompted to respond with these sets of values instead each individual used these terms to explain the dearth of co-operation among firms in the sector.

Co-operation has been initiated by third parties i.e. the trade association and the development agency and indeed by one firm but all attempts have failed to produce

<sup>6</sup> Enterprise Ireland

close inter-organisational linkage due to these two basic values which shape the 'rules of the game'

### 9.5.1 *Rivalry at Inter-firm level*

The sense of rivalry exists at two levels. The first level is the firm level and the second is the supporting organisation level. At each level there exists inter-firm and inter-organisational rivalry. We discuss inter-firm rivalry first. The nature of this rivalry has prevented collective action for the promotion of Irish branded bakery products which the SDC (1990) highlighted as a necessary initiative for the growth and development of various segments of the market. Despite a fiercely competitive and price sensitive climate there has been little effort on the part of small to medium sized bakeries to jointly purchase inputs such as flour. The bakery industry has traditionally been one that is shrouded in secrecy so as to protect family traditions and recipes for example (Garvey Interview, 2005) and it is suggested that firms do not engage in co-operative processes so as to maintain the historic levels of secrecy.

Despite the efforts of the Flour Confectioners and Bakers Association (FCBA) to promote joint purchasing activities among its bakery members all such attempts have failed. The FCBA secretary, in interview, suggested that there exists a conflict of interests between the organisation's associate members i.e. suppliers (e.g. Odlum's and Boland's) and its small bakery members (i.e. buyers) and that suppliers are "strongly against" any such co-operation. Indeed, the larger member firms (which include the five key bakery groups identified in Section 9.2.2) were also opposed to small firm collaboration, as it would pose a threat to their market power. The fact that both the chief executives of Brennan's and Neville's sit on the committee of the FCBA has played a significant role in determining the association's direction and agenda.

This scenario is largely similar to that documented by Panizza (1998) in the Italian industrial district of Casarano where large firms (1,000 workers) co-exist alongside small firms. As the large firms are almost completely integrated, they do not operate in co-operation with the smaller ones and their power has influenced the strategy of the local trade association. Common initiatives that are taken by local supporting



organisations are often short lived because they do not have the support of the main actor in the local economy

Attempts at co-operation, outside of the realm of the trade association and among small to medium sized bakeries have also failed. The director of one small sized North Dublin firm<sup>7</sup>, in interview, described how he had tried to organise a joint purchasing venture amongst his fellow small firm competitors. Despite his interpersonal connections (that involve playing golf and meeting for drinks) with some directors of competing firms, a purchasing consortium failed to emerge because of fear of opportunistic behaviour. What this indicates is that there is entrepreneurial vision but that it is individual rather than collective.

This failure to co-operate can again be related to a scenario documented by Paniccia (1998) where ‘tacitly accepted rules’ within a local community not only prevent co-operation but also promote opportunistic behaviour such as poaching of employees, even among firms whose managers meet informally in cafes and bars. Paniccia (1998) adds further that ‘friendship linkages, belonging to the same political party or ideology, as in Civitacastellana, Prato, Bassano etc are not an obstacle to free riding, non co-operation and opportunistic behaviour’. Among the reasons for this are economic incentives such as saving on productivity that outweigh the risk of retaliation, which is almost zero (Paniccia, 1998). While there exists a set of social networks in the bakery sector in Dublin – for example socialising at the FCBA organised events such as the annual ball and golf tournaments and as mentioned above firm owners meeting one another in a social setting – there is no inter-relationship between business and social activity. What this means is that, as in the Italian case, if opportunities arise (e.g. poaching of labour, making improvements to productivity) that somehow impinge on the business of competitors such activity is deemed acceptable, as it will not conflict with any social interaction. Social embeddedness in this context has not facilitated the transition from purely market exchanges to more co-operative interaction.

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<sup>7</sup> The director at interview requested that his firm remain anonymous

Co-operative strategies such as the organisation and co-ordination of the Bakers and Confectioners Skillnet Programme by the FCBA<sup>8</sup> have succeeded in addressing a skills shortage<sup>9</sup> within the industry. However, the sharing of knowledge (i.e. know-how) and information and general sectoral collaboration amongst firms with common training needs has proved less successful. We were informed by representatives of the FCBA that even within the large bakery groups, such as Brennan's and the IAWS owned Irish Pride bakeries, training and examinations were performed at each individual plant rather than collectively within one of the group's plants. The training courses, which require a minimum number of hours of participation in order for employees to become certified, were designed around firms' needs. This precluded the delivery of training courses in any central or collective manner i.e. being held in one particular place and indeed prevented the examinations from being conducted in any one plant or venue.

The overwhelming strength of the values under which firms operate i.e. secrecy and rivalry have succeeded in moulding the provision of training in this manner (Garvey, Interview, 2005). Even where a number of firms are members of the same corporate group segregation for training purposes was a requirement. The rationale for this lies in the desire to maintain secrecy at almost every level and across all elements of the groups' operations so as to avoid any inadvertent transfer of information or know-how among firms' employees (Garvey, Interview, 2005). This model stands in stark contrast to the *gruppi* model of the Italian industrial districts where business groups 'are a very important stimulus for cumulative learning and learning by doing' (Paniccia, 1998).

### 9.5.2 *Rivalry at Inter-Organisational Level*

In addition to inter-firm rivalry, we indicated above that inter-organisational rivalry also pervades the two supporting organisations – the Irish Association of Master Bakers based at the National Bakery School in Dublin Institute of Technology (DIT) and the FCBA. Instead of joint promotion of the industry, the two associations are

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<sup>8</sup> The Bakers and Confectioners Skillnet programme was set up in November 1998 and is funded by the National Training Fund through the Department of Enterprise, Trade and Employment.

<sup>9</sup> 80 per cent of bakery employees have no formal training or qualifications (Food Ireland, 2003).

engaged in a competitive battle to service the industry's training needs. This has further fuelled inter-firm rivalry among bakeries as firms seek support from one or other of the associations. A director of one of the north Dublin bakeries, when questioned about trade association involvement, suggested that he had "no time" for the FCBA but was actively involved in training programmes administered by the DIT association. The division in trade association membership has prevented firms from sharing a common set of characteristics upon which trust and co-operation among co-located firms can be established. As highlighted in Chapter 8 the trust underpinning the development of the PCI was fostered in this exact manner.

As long as rivalry pervades at the inter-organisational level (i.e. between the two trade associations) a custom of co-operation rather than rivalry is unlikely to be established. In the Italian industrial districts, for example, Dei Ottati (1994) emphasises the special role played by a large number of formal institutions that include, among others, trade associations. These institutions are responsible for supporting, reinforcing, policing and spreading the values of constructive competition and co-operation.

### **9.5.3 Sources of Rivalry**

Historically, firms have competed on the basis of price. This tends to further fuel the rivalry amongst firms operating in the industry (*Leatherhead Food International*, 2003) and, as indicated in Sections 2.4.3 and 2.4.5 in Chapter 2, obstructs co-operative behaviour. According to the SDC (1990) price is a major determinant in the purchase of bread (i.e. bread is price elastic) evidence of which is in the 'sharp increase in own brand label bread sales following the bread price war of early 1989'. Given that price wars pose a significant threat to profitability companies are beginning to compete on non-price factors such as advertising and promotion, brand positioning, product quality, functionality or packaging (*Leatherhead Food International*, 2003).

The SDC (1990) notes, however that

'The dominance of the market by generic brands makes it difficult for a manufacturer to sustain a premium brand image by promotion alone

Of the major brands Brennan's first established its name by perceived quality and then consolidated this through promotion. That there is some customer loyalty to brands is evidenced from the willingness of other bakers to buy and produce branded breads after their original bakers had ceased manufacturing but in a static market with major channels of distribution (i.e. the multiples) having much more price leverage than the bread manufacturers and with minimal product differentiation, the role that promotion can play is supplementary'

What this highlights is that competition based on price will always be a feature of operations in the bakery industry. While the market for sliced pan bread is static (i.e. sliced pan per capita consumption) other areas of the market are experiencing growth namely speciality breads and morning goods, the sale of which is up by 43 per cent since 1996 (Cahalan, Interview, 2003, McLoughlin, Interview, 2003)

## 9.6 Hidden Ownership Ties

The degree of secrecy amongst firms operating in the bakery industry is reflected in hidden ownership ties among horizontally aligned firms. It was only through interview with either the firms in question or the FCBA representative that linkages were revealed. One family run, small sized<sup>10</sup>, North Dublin firm that has been in operation since 1950, established in 1988 a second (small sized<sup>11</sup>) bakery under a different company name. The director (Manning, Interview, 2005) indicated that the need for a new company (with separate plant and operatives etc.) was driven by the set of "competitive pressures" that prevailed at the time. The original firm was and still is a bakery with a number of retail and cafe outlets located across north and south Dublin. In the late 1980s and early 1990s market conditions were such that in-store bakeries – in particular Superquinn's – were gaining market share (at the expense of existing high street bakeries). Superquinn did not have the capacity to fulfil its own requirements in terms of baked goods and began to outsource. The sub-supply of part baked bread and pastries to Superquinn opened up a new market, a market that the bakery firm in question thought could ensure its survival.

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<sup>10</sup> The firm employs 35 people

<sup>11</sup> The second firm employs 45 people

Superquinn, however, refused to outsource its bakery requirements to this particular bakery firm as it was thought that they were in competition with Superquinn because of its cafe and retail bakery outlets. As a solution, a second company was established and a family member appointed to operate it. Superquinn was satisfied with this arrangement and began to outsource its requirements of baked and part baked goods from the second firm. A collaborative and co-operative relationship between Superquinn and the bakery firm failed to emerge because of the bakery's reluctance to operate an "open book" with regard to costs etc.<sup>12</sup>

Despite the fact that family members work for both firms (for example in marketing and sales roles) the link between the two firms is not widely known and preservation of this is considered very important. For example, once the relationship between the two firms was revealed at interview a request was immediately made to conceal both firms' identities. Development advisors in the development agency also concealed the link between the firms when interviewed further adding to the secrecy within which bakeries operate. We are certain that the advisors interviewed were aware of the link as they assisted in the start-up of the second firm. Although there is no "official" link between the companies on the Companies Registration Office database industry insiders are aware of the connection (Garvey, Interview, 2005).

Linkages between some of the largest bakery firms were also only revealed at interview and despite extensive searches of various databases<sup>13</sup> the full extent of ownership ties among firms in bread production were not immediately apparent. It was only in interview with the secretary of the FCBA that the relationship between Brennan's and a number of other bakeries became apparent (See Table 9.4 and Section 9.2.2).

## 9.7 Limited Organisational Change

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<sup>12</sup> This contrasts greatly to the relationship that developed between Superquinn and Oceanpath that is described in Chapter 7.

<sup>13</sup> The databases searched were FactFinder (newspaper and trade magazine database), Kompass and Companies Registration Office.

According to Panizza (1998) 'an external player may introduce new rules of behaviour and create a new hallmark for new followers' thus altering the prevailing set of rules and organisational design. Within the bakery industry we can identify Cuisine de France as the driver behind change in all four of the small to medium sized North Dublin firms interviewed. All four firms have altered their production to include the provision of frozen and part-baked bread and pastries (where previously production had been based on producing fresh pastry goods). One of the three firms has ceased production of all lines except for those that are outsourced to them by Cuisine de France. The three other firms supply to a number of other buyers such as the large retail multiples as well as buyers in Northern Ireland and Britain.

The relationship between Cuisine de France and its sub-suppliers is highly bureaucratic (See Tables 7.1 and 7.3 in Chapter 7 for definition) in that it is based on contract with very little scope for relational contracting i.e. unwritten rules (Grandori, 1997). The sequential interdependence between Cuisine de France and its sub-suppliers (in particular the four north Dublin bakeries) is characterised by one-way hierarchical sub-contracting. In other words the contracting firm dictates the terms of the transactions without room for mutual adjustment (Grandori, 1997). This means that the small bakeries have little opportunity to acquire knowledge of the large firm's (Cuisine de France) operations. This in effect limits the extent to which knowledge can be exchanged as 'learning by interacting' (Carbonara, 2004) is impeded by contractual obligations. Through conscious co-ordination of activities based on short-term agreements Cuisine de France can effectively control the outward flow of knowledge.

Although the arrival of Cuisine de France to the market has changed the way in which small and medium sized bakeries operate (e.g. the imposition of quality control systems as well as the development of contractual sub-supply relationships) there is still a prevailing sense of rivalry and secrecy that is preventing collaborative<sup>14</sup> (rather than purely contractual) relationships from developing.

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<sup>14</sup>Examples of collaboration and co-operation are given in Sections 2.4.1 and 2.4.2 in Chapter 2.

It may be in the best interests of Cuisine de France to maintain and promote the current set of values or 'rules of play' (i.e. secrecy and rivalry amongst competing firms). In so doing they can utilise the resources (i.e. production capacity, equipment and expertise) of its small bakery sub-contractors while at the same time preventing the emergence of a significant group, that in the presence of a more co-operative set of values, could threaten to erode Cuisine de France's market share. It can be said therefore that asymmetry (i.e. maintenance of current market power) is a motivating factor in the emergence of non-co-operative practices rather than co-operative ones (as was the case with the PCI in Chapter 7).

There are some aspects to the current arrangement that enhance inter-firm linkages, for example there now exists a set of vertical links (albeit purely economic in the form of sub-contracting ties) among a set of horizontally aligned firms that prior to Cuisine de France's presence in the market place would have been unlikely. On the other hand, given that there is no knowledge or information exchange between Cuisine de France and its sub-contractors, beyond what is required to fulfil contractual obligations, there is little or no long-term dependency on the small bakeries (for expertise and know-how) which renders them highly substitutable. For the one bakery that produces solely for Cuisine de France, cessation of contract would mean certain closure.

Despite the fact that the four north Dublin bakeries share common characteristics, i.e. they are all involved in the sub-supply of part-baked and frozen produce to Cuisine de France, there has been no attempt to co-operate with one another. This further emphasises the fact that the rules of play are firmly characterised by a sense of distrust, that stems from an inherent sense of rivalry and secrecy. We indicated in Chapter 2 (Sections 2.4.2 and 2.4.3) that trust could emerge as a by-product of economic interaction. This has to date, however, not been the case among either the small bakery firms or between the small bakery firms and Cuisine de France.

The blame for failure to instigate a more co-operative and less rivalrous business environment cannot be apportioned solely to the large groups operating within the industry (such as Cuisine de France) – small firms are equally responsible. All four of the North Dublin bakeries are family owned firms. The same can be said for the

majority of small bakeries operating in Ireland in general (Garvey Interview, 2005) It is this small firm characteristic that may be at the root of non co-operative practices In Chapter 7 for example we highlighted that *family* within the fish processing sector provides the means through which values and norms of behaviour are propagated In contrast to the fish-processing sector however, the values that have been generated in the bakery sector are individualistic (rather than collective) and rivalrous (rather than co-operative) Additional factors have, of course, played a role in shaping organisational design and we should be mindful of these, for example price competition, the history of price wars and the emergence of large bakery groups that have dominated the agendas of supporting organisations

### **9.7.1 Why *Cuisine de France* is a “bad” Leader Firm**

Despite the success story behind *Cuisine de France* and its growth from a small, privately owned firm employing 14 people in 1992 to a large publicly owned company employing in excess of 500 people in 2005 it is arguable that this is less a success than it might have been from the point of view of the Irish bakery industry as a whole Through a series of market based links *Cuisine de France* has established a large base of sub-suppliers to which it sub-contracts the production of various baked goods While we do not dispute the benefits of these market based links they are however transitory By not engaging in relational contracting, *Cuisine de France* has failed to embed in Dublin and/or Ireland Its set of suppliers, as indicated above, is entirely substitutable Failure of large firms to embed themselves in Ireland has in the past resulted in their re-location to other, low cost destinations leaving heavily dependent suppliers without buyers (See Section 3.3.2 in Chapter 3 for detail of this) The structural changes that have taken place within the bakery industry in Ireland in the last 10 years (e.g. the creation of sub-contracting ties) are therefore flawed due to the lack of embeddedness on the part of the contracting or “leader” firm Moreover, these smaller sub-contracting firms are not afforded the opportunity to learn by interaction, as co-operative or relational linkages are not pursued Knowledge and learning therefore reside in one firm and are prevented from being diffused to other firms operating within the industry



There are three types of linkages that have over time emerged in the bakery sector. At a national level these have manifested themselves in the form of ownership links that have culminated in large bakery groups. More recently – i.e. since the establishment of Cuisine de France – horizontal linkages have developed both locally and nationally but these are co-ordinated on the basis of contract. Despite continuous re-contracting it seems that trust has failed to emerge. From our interviews with firms and with the FCBA representative we can conclude that firms generally conduct transactions at arms length. In other words they are co-ordinated on the market. There is no evidence in the bakery sector of the extra-market co-operation that has evolved in other sectors or sub-sectors from inter-personal, market based interaction. Where that kind of interaction has generated trust in other cases, it has not done so among the bakeries. The main reason for this seems to be a belief that acting as a stand-alone firm it is possible for a bakery to protect family traditions (e.g. recipes) and avoid the opportunistic behaviour that closer ties might invite.

The dominance of large firms has been further compounded by the emergence of large bakery groups (e.g. the IAWS owned Cuisine de France and Irish Pride Bakeries). This has meant that trade association agendas have been swayed by the power of the large firms to address the issues most pertinent to them. As a result, trade association initiatives to encourage co-operation (e.g. joint purchasing) among small sized bakeries have been suppressed. The historic rivalry, competition based on price and the price wars of the late 1980s have produced a set of values (i.e. rules of the game) that do not allow for co-operation. Given that the firms in operation in north Dublin are well established (see Table 9.8) and were in existence during the price wars, the memory of destructive competition is not far from the minds of their directors. Through continued family involvement this memory is passed from generation to generation. In so doing, the values of rivalry as well as secrecy are nurtured and maintained. This leads to the conclusion that concentration (of both firms and employment in a particular location) does not necessarily lead to co-operation.

We hypothesised in Section 9.2 above that the failure of bakery firms to co-operate was due to a number of factors and the interplay between them. From our empirical data and analysis we have shown that this is the case. Firstly, the conventions (rules of play) under which firms operate propagate the values of secrecy and rivalry. In other words they provide the context within which all transactions are conducted. Intertwined with this set of conventions is the way in which firms compete with one another. Competition based on price has reinforced inter-firm rivalry. To steer firms away from destructive competition the literature emphasises a role for supporting organisations such as trade associations that could promote competition based on quality for example. Trade associations in the bakery sector are not providing the level of “institutional thickness” necessary to provide a new co-operative context within which inter-firm relationships could be generated. This is due to the fact that inter-organisational rivalry permeates the two trade associations. What this means is that there is no collective or integrated approach to industry needs. Furthermore, this is contributing to the “distance” between firms.

Where supporting organisations fail to co-ordinate co-operative processes large “leader” firms may succeed in implementing collaborative processes. In the bakery sector the reverse is evident. The sub-contracting relationships that Cuisine de France have entered into with small and medium sized bakeries around Ireland, but in particular North Dublin, are formalised to the extent that relational contracting is not entered into. Moreover, small firms have little opportunity to learn through interaction as Cuisine de France controls the outward flow of knowledge by favouring short-term agreements over longer relation based partnerships.

The leader firm behaviour in this case study can be attributed to structural characteristics of the bakery sector, in particular the presence of industry groups that control a number of large bakery operations. To maintain market power it is in these industry groups’ interest to promote the current set of values (i.e. secrecy and rivalry) so as to prevent the emergence of a significant group of co-operating small firms.

## Chapter 10· Discussion

### 10 1 Introduction

In this chapter we compare and contrast the inter-firm relationships in North Dublin's fish processing (Chapter 7), printing (Chapter 8) and bakery (Chapter 9) sectors. In doing so, we establish what has caused different inter-firm dynamics to emerge. Given that firms in each of the sectors share the same geographical place, in other words they have in common with one another elements of the *transactional* and *contextual environment* i.e. the place, North Dublin, in which economic activity takes place, there are other factors in their respective transactional and contextual environments that have shaped the nature of interaction between and among firms. It is to the difference in sectoral attributes – some territorially specific – that we attribute disparate trajectories in firms' interactive processes. Although these have been highlighted and discussed in each of the case study chapters some further evaluation is required so as to state more clearly the contribution made (by the case study findings) to the general discourse on modes of local cluster development and in particular to knowledge of local economic development in Ireland. Within this clarification process an assessment is made as to whether the inter-firm dynamics documented constitute industrial clustering.

### 10 2 Transactional and Contextual Environment

In Chapter 2 (Section 2.11) we gave a brief description of transactional and contextual environments. Storper (1997b: p41) believes that the latter influences the nature of the former and he elaborates on the role of each within a region:

'The region is not merely a derived outcome of the informational or cognitive structure of transactions associated with technologies and organizations, however. For one, the conventions and relations which develop in association with particular production systems in

a given region may affect the long-term evolution of technologies and organisations in those sectors

In other words, human relations, rules and conventions (contextual environment) are at the heart of the economic process and transactional relations (transactional environment) are co-ordinated on the basis of the rules of the game that are derived from conventions. Furthermore, Storpei (1997b p41) suggests that even market (rather than co-operative) linkages depend on 'specific conventions of market action among actors without which there is no co-ordination among them'

Storpei's (1997b p41) fundamental argument is that 'the ensemble of conventions and relations that come into existence in a territorially defined way may cut across the array of production systems and activities found there, affecting the evolutionary pathways of a variety of sectors in a regionally or nationally common way'. This, however, cannot be said for the three sectors in North Dublin. In other words there is no sense of commonality (such as shared values, rules of game etc,) among firms in fish processing, printing and bakery simply by virtue of their shared location. This means that despite sharing a location there is no unifying contextual environment and therefore their respective transactional environments i.e. input-output, supply chain and other market and/or co-operative relationships are consequently different.

### **10.2.1 *The Three Sectors: Common Features***

There are some features common to all three sectors that strengthen the argument for comparative analysis in the first place. All three sectors are classified as traditional and in mature stages of their respective industry life cycles. All three sectors, to varying degrees, display spatial concentration in North Dublin. In organisational terms the firms that comprise these sectors are small to medium in size and predominantly indigenous. The exceptions to this are in the print and bakery sectors where there are foreign owned parent companies in the former and publicly owned companies in the latter – some shares of which are held by foreign owned firms. Firms in fish processing and bakery are characterised to a large degree by family ownership structures.

## 10.2.2 Contextual and Transactional Environments in the Fish Processing Sector

To reiterate contextual environment comprises social institutions, conventions, norms and trust – mostly non-physical features that are embedded in place and specific to a given location. The contextual environment shapes and frames the environment within which transactional and non-transactional inter-firm relationships occur. Among fish processing firms in Howth, North Dublin there are norms of economic behaviour that are both place specific and historical in context in that they have evolved over time through (local) social interaction. This local, social interaction has been made possible by combined sectoral and location specific characteristics. The sectoral characteristics are those which require a firm engaged in secondary fish processing (without its own fleet of boats) to source inputs at fish auctions. Agents from competing firms are physically gathered together on a regular basis (sometimes daily) thus creating a social environment in which tacit information is exchanged and repeated personal interaction is nurtured. The locational characteristics are such that a number of boats operate out of Howth and a fish auction is held at least three times a week by the co-op. The basis for local social interaction is thus apparent.

This repeated interaction has enabled the various actors to undertake an activity (local sourcing of inputs) with the expectation that they have a ‘framework of action’ in common with other actors engaged in that activity (Storper, 1997b p45). What this means in *actual* terms is that destructively competitive behaviour has been avoided and a collective approach to the sourcing of inputs has emerged. This latter conclusion should be treated with some caution however, as firms’ specialisation has also contributed to horizontal co-operation. What these particular conventions have facilitated is the sharing of information (prices) among a group of co-located competing firms.

The means through which values and norms of behaviour are propagated in this instance is the *family* as all the firms in Howth are family owned and have had a long association with a location on the pier. These “norms” co-ordinate another aspect of input sourcing – the vertical inter-firm relationship. In the case of the processor, Oceanpath, and the boats (local and non-local suppliers) co-ordination is based on sectoral norms of conducting business and a collective vision for the whole of the

industry which endeavours to ensure that each actor along the supply chain stays in business

There is a mutually reinforcing process between transactional and contextual environments. Repeated economic exchanges between vertically aligned firms (e.g. between the auction house and Oceanpath) have led to resource sharing i.e. sharing of refrigeration space. This co-operation is co-ordinated less on the basis of social trust and more on the basis of trust derived from repeated economic transactions. Out of the transactional sphere trust has emerged and a contextual dimension created, forming the basis for further interactive processes. Moreover, this serves to embed the economic (transactional) linkages.

Although there is a mix of relationship types within the sector – from organic to consciously co-ordinated - they can all be described in terms of social networks. Despite the different co-ordination mechanisms what is common throughout the various interdependencies – pooled, intensive, sequential and reciprocal is the social (informal) rather than bureaucratic (contractual) nature of the relationships. The creation of these social networks was made possible by shared values and social trust (in regard to fair competition, collective action and commercial information sharing) and reputation and dyadic trust derived from repeated transactional exchanges (in regard to resource and technical information sharing).

Between the leader firm (Superquinn) and its fish supplier (Oceanpath) a contextual environment has been created that has transformed a purely transactional (supply chain) relationship into a collaborative, knowledge sharing and ultimately innovation inducing one. The success of the relationship (as discussed in Chapter 7) can be attributed to bilateral trust, openness and commitment. There is a strong temporal dimension however to the creation of this particular contextual setting. Over time, inter-personal trust evolved into process-based trust that eventually resulted in dyadic trust. This atmosphere of trust has ensured the successful co-ordination of the relationship without contract. Furthermore, a mutually beneficial partnership has been created facilitating improvements in the supplier's strategic and managerial functions (as in the flagship model discussed in Section 7.6 in Chapter 7), while at the same time bridging the gaps in technical information via the leader firm's external sources.

of knowledge (Boschma and Lambooy, 2002) Acting as a source of external knowledge or a channel through which external knowledge is received the leader firm has led the supplier to innovate in a number of different ways e.g. automating, traceability, new product development (value added products) Moreover, the leader firm has significantly enhanced the supplier's configurational capabilities (Bender and Laestadius, 2005) by providing financial support for the modification of production systems and attendance at trade fairs thus enabling them to pursue a second or third stage innovation strategy In short, the leader firm enjoys the benefits of vertical integration without vertically integrating – what may be termed quasi-vertical integration (Langlois and Roberston, 1995 p138)

An element of the transactional environment i.e. the way in which firms compete in fish processing complements and reinforces the values of fair competition and collective action By competing, less on the basis of price and more on quality and ways of adding value to generic products, firms are differentiated from one another Furthermore, specialisation has allowed firms to carve out market niches and avoid direct competition Such an environment is conducive to co-operative processes

Faced with uncertainty in terms of level and consistency of supply due to depleting fish stocks as well as quota limits firms are only guaranteed supply via aquaculture production Through co-operation between complimentary processors (i.e. processors of shellfish and processors of white fish) sharing of supply has helped to maintain the channels for obtaining wild species open

There are real economic interdependencies (transactional) between the firms in North Dublin due to the structure of the sector and the way in which firms diverge from pure processing (e.g. wholesale transactions among the secondary processors) that reinforce their co-location from a logistical viewpoint Storper (1997b p41) is however, keen to point out that 'the proximity-inducing effects of conventions may "drag on" for long after the input-output (transactional) reasons that brought geographical concentration of the production system into being have disappeared' The existence of trust (social and dyadic), social institutions and conventions are therefore integral to continued economic and co-operative interaction among groups of firms in North Dublin's fish processing sector

### *10 2 3 Contextual and Transactional Environments in the Printing Sector*

Unlike the fish-processing sector in North Dublin, the printing sector is characterised (both locally and nationally) by a high degree of inter-firm rivalry with firms generally keeping their cards close to their chest (Jacobson and Mottiar, 1999). Unlike the fish processors in Howth there is no evidence of information sharing (commercial) among competing firms in North Dublin's print industry. Similarly, there is no history of co-operative action (apart from that which occurs within the supporting organisation). This makes the first case of co-operation – the PCI – an important one as it represents organisational change within the industry.

The contingencies for motivating the formation of the PCI – an alliance between five competing firms – can be found in the industry's immediate (transactional) environment. Despite the range and mix of contingencies motivating the formation of the PCI it would not have been created without trust (an element of the contextual environment) as a facilitating mechanism.

It is the set of sectorally, rather than spatially, specific factors which have been identified as the motivations for the alliance formation (see Section 8.7 in Chapter 8). Market conditions in relation to the procurement of large public printing contracts were such that Irish firms had zero market share because their European counterparts, with economies of scale and scope, had created barriers to entry. Individually, the five firms did not have the scale to compete against European firms. However when resources (physical and human) were combined, efficiency was created that enabled the removal of entry barriers. In addition to this there was a desire to obtain synergies in technology and information sharing.

Market conditions alone however did not trigger the creation of the PCI. Environmental conditions such as the rate of technological change and internal conditions (within firms) such as the lack of efficiency (in terms of scale) and a diverse range of skills (knowledge) and technology in production processes (property) combined to create a climate where firms had one of two choices: either co-operate to prosper or compete against one another and run the risk of reduced margins and profits.



The contextual environment however, is what has moulded the PCI and transformed it from a *theoretical* solution to an industry problem to an *actual* functioning entity capable of resolving certain sectoral issues. Within this contextual environment lies the initial entrepreneurial vision of the firms' managing directors. More importantly, however, is the role of trust and its involvement in the co-ordination of the PCI.

The industry's common value system promotes core values of secrecy and rivalry - both of which have prevented co-operation from taking place in the past. A subsystem for the creation of common values is however, engendered in the industry representative organisation - the Irish Printers Federation (IPF) - that acts as a vehicle for characteristic, institutional and knowledge based trust.

Like the trust that evolved between the leader firm (Superquinn) and its supplier (Oceanpath) in the fish processing sector there is a temporal dimension to the creation of a trusting environment in the case of the PCI firms. Four of the five MDs served together on the council of the IPF over a twenty-year period. Repeated social interaction in an institutional environment (representative organisation) has played an important role in fostering trust and co-operation in the case of the PCI. It is not automatic that knowledge, institutions or even common characteristics are translated into trust (Dwivedi *et al*, 2003). Often there is a trial period in which repeated transactions and close ties allow for the formation of trust. For the PCI, this trial period is evidenced in the two-year period prior to formalisation. Through joint service on the IPF council (rather than mere membership of the federation) the MDs had repeated dealings with one another and a common background was established upon which a mutual understanding was developed. This meant that MDs could undertake an activity with the expectation that they would have a framework of action in common with one another (Storper, 1997b p45). Through personal interaction the MDs acquired extensive knowledge of one another - further instilling the basis for trust.

The initial arrangement among the four original PCI member firms (that operated for two years) could be classed as a social network as it was co-ordinated without contract. Despite the creation of a formalised governance structure in 2002 - embodied in a three page contract binding the firms as partners and including the appointment of a managing director to oversee the PCI's operation - the consortium

operates largely on the basis of individuals' "word" rather than any formal contractual stipulation. In other words, it is the particular contextual environment described above that has led to the PCI's operational success.

Unlike the fish processing sector where trust, in part, has developed because of actors' geographical proximity to one another, the basis for trust between PCI member firms is organisational rather than spatial proximity. Although the PCI firms are located nearby one another, trust was the outcome of inter-personal exchanges and joint service of the member firms' managing directors on the IPF council. In theory, therefore, co-operation could have taken place between spatially dispersed firms.

What the printing case study shows is that a prevailing set of conventions which determine the action frameworks of firms in sectors can be overridden by a new or indeed, sub-set of conventions that are created socially and institutionally and result in the formation of bureaucratic networks.

#### ***10.2.4 Contextual and Transactional Environments in the Bakery Sector***

The conventions (i.e. rules of game) in the bakery sector, like the general set of values in the printing sector, promote secrecy and rivalry in the transactional environment. Unlike the printing sector however, a new sub-set of conventions have failed to emerge and so the predominant firm type is "stand-alone" (see Section 2.8 in Chapter 2 for an explanation of this firm type). The failure to develop a new set of conventions is attributable to aspects of the transactional environment, for example the dominance of price competition. Nurturing and re-generating the existing set of conventions is a large firm that, in contrast to the leader firm in the fish-processing sector, engages in highly formalised sub-contracting arrangements with zero scope for relational exchange. What this means is that the small firm sub-contractors have little opportunity to learn through interaction as the "leader" firm controls the outward flow of knowledge by favouring short-term agreements over longer relational based partnerships. This serves to insulate small firms from opportunities to acquire new knowledge thus preventing innovation from occurring.

In the print sector the creation of a sub-set of values (i.e. trust) is linked to the industry's supporting organisation. In other words the trade association has provided an environment where trust is fostered through actors' joint participation on its council. What this means is that in the print sector there exists a level of "institutional thickness" capable of changing the prevailing contextual environment and inducing co-operation. This is however, not the case in the bakery sector. The reasons for this are as follows: first, inter-organisational rivalry permeates the two trade associations preventing any collective or integrated approach to industry needs, second, the split at inter-organisational level means that firms are unable to find "common ground" upon which co-operative processes might be built and third, trade association agendas are swayed by the power of large firms or groups of firms to address the issues most pertinent to them. As a result, trade association initiatives to encourage co-operation (e.g. joint purchasing) among small sized bakeries are suppressed.

Other structural characteristics however, have played a role in maintaining inter-firm rivalry and secrecy, primarily the age and ownership profile of bakery firms. Given that the firms in operation in North Dublin have been located there for some time (e.g. one firm was established in the late 19<sup>th</sup> century while others began their operations in the mid to late 20<sup>th</sup> century) and were in existence during the price wars of the late 1980s, the memory of destructive competition is not far from the minds of their directors. Through continued family involvement (both ownership and control) this memory is passed from generation to generation. The values of rivalry and secrecy dictate the action frameworks of firms and so co-operation is avoided so as to hedge against opportunistic behaviour.

### ***10.2.5 Contextual and Transactional Environments in the Three Sectors Explaining the Differences***

Although each of the sectors are characterised by some degree of uncertainty, the way in which firms in fish processing, printing and bakery have responded to such uncertainty is hugely divergent. We outlined in Section 2.4.6 in Chapter 2 that co-operation between firms facilitates the reduction of strategic uncertainty and that structural change leads to modification of organisational structure. We described how relationships evolve from organic, spontaneous forms to more structured, conscious

and deliberate linkages depending upon the degree of uncertainty. The implications for organisational structure are that firms are orientated more towards deliberate co-ordination or ownership integration than organically co-ordinated forms of inter-firm relationships.

Before we explain the causes of the differences in inter-firm relationships in the three sectors let us reiterate briefly the uncertainty that is characteristic of each of the sectors. In the fish processing case study, the leader firm-supplier relationship is framed in a context of uncertainty with regard to food safety whereby control over standard of production, range of products etc. was necessitated by growing consumer concerns about the safety of fresh produce. In addition to this, fish processors were faced with structural change due to consolidation on the purchasing side. This resulted in the consolidation of processors or processors searching for ways of differentiating themselves. We showed that a coping mechanism for dealing with such structural change is to seek some type of external affiliation.

Within the printing sector technological change has meant that firms have had to adapt and modify the way in which they produce outputs. The rate of technological change is high which means capital investment in equipment carries a high risk – the risk of functional obsolescence. Throughout the 1990's changes in a specific market serviced by the printing sector took place that caused Irish print firms to concede market share to their European counterparts (see Section 8.6 in Chapter 8). Uncertainties in relation to re-entering this market were brought to the forefront as individual Irish firms lacked the scale and diverse range of skills and services to compete against European firms.

Uncertainties in the bakery sector surround the government withdrawal of retail price maintenance and bread subsidies to bakeries. Structural change in the form of rationalisation processes and bakery closures together with changes in bread production introduced low price generic branded products. In addition to this, per capita bread consumption in Ireland is below the European average. Falling consumer demand for certain products (sliced pan) and rising consumer demand for others (i.e. speciality breads) has further fuelled a climate of uncertainty in the sector.

Storper (1997b p41) suggests that uncertainty can be resolved through convention among actors but that the form of resolution is not determined by the uncertainty itself. Applying this rationale to each of the sectors it is clear that mechanisms for dealing with uncertainty will be different so long as the conventions that underlie firms' behaviour are also different. In other words, the existence of uncertainty alone will not lead to the development of co-operation, instead some social institution or pre-existing trust will induce the co-operation where co-ordination integration is favoured. Uncertainty, however, can also be managed through vertical ownership integration as an alternative.

The underlying set of conventions in each of the sectors determines the way in which firms respond to uncertainty. Given the particular set of conventions (see Section 10.2.4 above) that determine firms' behaviour in the bakery sector it is not surprising that the mechanism for coping with uncertainty is vertical integration. Furthermore, the prevalence of large *bureaucratic* industry groups that favour short-term contractual rather than long-term collaborative interaction with their sub-contractors as well as stand-alone firms shows that responses to uncertainty do not necessarily involve co-operation.

In the printing sector the response to changes in the procurement market could have led firms to vertically integrate. Instead, a more immediate response in the form of co-ordination integration was pursued that allowed for sharing of resources (property and knowledge) without loss of autonomy. This however, was only made possible by a sub-set of the prevailing sectoral conventions (referred to in Section 10.2.3 above).

In the fish-processing sector the uncertainties (as described above) were tackled through the socially co-ordinated leader firm-supplier relationship. The social rather than bureaucratic nature of the co-ordination is attributable to the set of conventions and trust created during repeated economic exchanges. The more general set of conventions of fair competition and collective action meant that the supplier was predisposed to social rather than bureaucratic means of resolution.

What is common to both the fish processing and printing sectors is the entrepreneurial vision on the part of the individuals involved in the co-operative processes. This serves to further complicate our explanation for the disparate responses to uncertainty in these sectors. Taking entrepreneurial vision out of the equation it is possible that the inter-firm relationships (in print and fish processing) may have taken different trajectories. Entrepreneurial vision therefore forms part of the contextual environment.

The differences in inter-firm dynamics in each of the sectors converge with the theory (discussed in Section 2.4.4 in Chapter 2) that the degree to which firms co-operate with one another is largely dependent upon the industry or sector to which they belong and that inter-industry differences can help to explain the variations in inter-organisational relationships across industries (Ebers and Jarillo, 1997/1998). We cited intensity of competition, the degree of uncertainty, power structures and minimum scale of production as some of these industry factors.

In fish processing and printing, competition is based on quality, service and delivery whereas in bakery it is largely based on price. It is price competition that jeopardises co-operative processes (see Section 2.4.5 in Chapter 2) and in the bakery sector it is one of many factors that when combined have prevented co-operation from taking place. Power structures in the bakery sector are such that the interests of small firms are not represented at supporting organisation level which means that third party coordination of co-operation will be quashed by large firm members. This small firm versus large firm conflict is not a feature of either the printing or fish processing sectors. These elements of the transactional environment serve to further differentiate the sectors from one another and add another dimension to our understanding of inter-sectorial differences.

It is clear therefore that the different contextual environments in each of the sectors have shaped the various outcomes i.e. inter-firm relationships. Structural differences in each of the sector's transactional environments have however also played a role. It can be concluded therefore that differences in inter-firm dynamics are attributable to interplay between these two environments in each of the sectors.

### **10.3 The Importance of Co-operation in the Sectors**

In the fish processing sector, co-operation between fishermen and processors has ensured the survival of the primary processor. This is due to the fact that price squeezing is not a tactic employed by secondary processors when sourcing inputs from fishermen. Co-operation between firms and the industry's supporting organisation have allowed small firms to add marketing expertise to their set of capabilities, as the majority of small firm processors do not have in-house marketing expertise. Co-operation among competitors in Howth in the form of information sharing (commercial) has facilitated benchmarking that otherwise would not have occurred.

The leader firm-supplier co-operation has resulted in improvements in the supplier processor's production process, its product range and its quality standards. In the absence of co-operation these improvements would not have been made. The leader firm has played an important role in shaping its supplier's innovation enabling capabilities (see Sections 7.3, 7.10.3 and 7.12.3 in Chapter 7). Acting as source of external knowledge the leader firm has significantly enhanced its supplier's transformative capabilities. Furthermore, by providing financial support the leader firm has improved the supplier's configurational capabilities. In short, the co-operative relationship has resulted in innovation.

In the printing sector, alliance formation has facilitated the sharing of risk by combining capabilities and resources to tackle declining market share. Co-operation has resulted in the winning of large contracts that Irish firms tendering on an individual basis, would not have won. Moreover, it has created additional mutual benefits such as information sharing and cost savings on input purchases. Key to the success of collaboration is the third party co-ordination efforts of the PCI managing director who oversees the consortium's operation and facilitates information sharing.

### **10.4 Answers to Research Questions**

In Chapter 1 we asked the following two questions

- 1 *Do clusters of industry exist in North Dublin?*
- 2 *What theory can best explain the reasons for and processes of clustering or non-clustering as presented in North Dublin?*

In order to complete our discussion and to link the case study findings and analyses (Part II of the dissertation) to the cluster literature and the Irish industrial context (Part I of the dissertation) we provide answers to these two questions

#### **10 4 1 *Do Clusters of Industry Exist in North Dublin?***

In Chapter 2 (Sections 2 4 and 2 4 1) we described how spatial concentrations of industry were deemed to be industrial clusters if there was some kind of interconnectivity between firms. From the literature we established that this interconnectivity involves co-operative rather than purely market based forms of interaction. All three industrial sectors (fish processing, printing and bakery) display various levels of concentration in North Dublin and therefore fulfil, in part, some of the cluster criteria. In fact, there are a large number of sectors in North Dublin that display spatial concentration (see Chapter 5) but through initial qualitative enquiries (i.e. interviews) it was revealed that co-operation was largely absent from these firm concentrations and therefore no further investigations were pursued.

In both fish processing and printing there is evidence of co-operation however it is more varied and generic in the former and limited and specific in the latter. In Chapter 2 (Section 2 3 1) we raised the issue of size and scale of clusters noting that generally clusters are perceived to be critical masses of large-scale international industries (Porter, 1998). At the same time, we were keen to emphasise that the scale of employment need not be particularly large. What was more important was firms' ability to produce synergy through their geographic proximity and interdependence (Rosenfeld, 1997). Although the scale of co-operative activity among firms in the fish processing and printing sectors is not pronounced it is none the less synergistic by virtue of various interdependencies between and among firms. For this reason we suggest that both sectors in North Dublin display elements of cluster activity and may therefore be classed as a type of local cluster.



In terms of types of cluster development (see Section 2.3.3 in Chapter 2) the fish-processing sector in North Dublin can be classed as a local “working” cluster. Although it is not at the mature or advanced stage of development (as per Rosenfeld, 1995, 1997) there exists social infrastructure capable of generating networks, which keeps the flow of information continuous. The elements of activity in the fish processing sector that constitute *clustering* are horizontal co-operation in the form of information (commercial) sharing, input sharing and fair competition, vertical co-operation in the form of resource and information (technical) sharing, and the collaborative, socially co-ordinated partnership between a leader firm and its supplier that has resulted in co-design practices, resource and information sharing and the leader firm acting as a bridge to technical know-how. In the fish-processing sector the emphasis is firmly on collective rather than independent action. This is reinforced at supporting organisational level through various support mechanisms that favour collective over individual approaches. Sometimes referred to as institutional thickness (see Section 2.7 in Chapter 2), the presence of such a third party organisation further strengthens the argument that clustering is a feature of this sector.

As stated above, the co-operation documented in the printing sector is limited in that it is specific to five firms in Dublin. Although the PCI is a network it shares some characteristics with the new and emerging configurations of industrial districts such as the Italian *gruppi* phenomenon (see Section 8.13.1 in Chapter 8). Moreover, the PCI represents a collective approach to the solution of an industry wide problem. Such collective action is characteristic of firms’ behaviour in industrial districts. If, as stated above, scale is not an issue then what is revealed in the printing sector can be classed as a type of cluster or industrial district. The way in which firms have organised themselves i.e. into stage and final firms, based on their individual capabilities (property and knowledge based resources) mimics the pattern of development in an Italian industrial district (see Section 8.13.1 in Chapter 8). In both the printing sector in North Dublin and the textile industrial district in Prato, Italy, a new competitive context warranted organisational restructuring so as to hedge against loss of market share.

Traditionally, Italian industrial districts feature flexible specialisation co-ordinated on the basis of close family and other social inter-relationships. We have discussed however, how the districts are undergoing organisational change (see Section 7.3 in Chapter 7) and how a range of co-ordination mechanisms (see Sections 7.4 to 7.5 in Chapter 7) may be employed. Therefore industrial districts are open to a much wider interpretation than previously thought. What is key to the concept is not the form of organisation but what underpins it i.e. trust and co-operation (Panizza, 1998) (see Section 7.3 in Chapter 7) – both of which are elements of the PCI (see Section 8.9 in Chapter 8). In the case of the PCI it was the supporting organisation that provided a common institutional context within which inter-personal trust was fostered.

Despite a concentration of firms in the bakery sector it cannot be classed as an industrial cluster. In cluster typology terms it could however be thought of as an underachieving cluster (see Section 2.3.3 in Chapter 2) given that there is the scale and opportunities for cluster activity yet at the same time there exists a void in the social fabric that prevents co-operation from taking place (Rosenfeld, 1995). Given the extent to which distrust and rivalry permeates every organisational level of the sector (i.e. firm and supporting organisation), together with firms' preference for a stand-alone rather than networked status and the more recent types of sub-contracting relationships that favour highly bureaucratic rather than relational contracting as a means of co-ordination it is fair to conclude that the bakery sector in North Dublin is not a cluster.

Furthermore there are significant barriers to cluster formation in the sector. As per Section 2.7 in Chapter 2 these relate to its institutional structure, the degree of regional insularity and the lack of skills (although there have been recent efforts to improve the level of skills through the Skillnet Programme). We have already commented on institutional structure in Section 10.2.4 above. In the same section we describe the nature of subcontracting relationships that effectively curtail the diffusion of knowledge and contribute to regional insularity in the bakery sector in North Dublin.

#### ***10 4 2 What Theory Can Best Explain the Reasons for and Processes of Clustering or Non-Clustering as Presented in North Dublin?***

Before answering this question it should be noted that we agree with Brown (2000a) who suggests that there is no unifying cluster theory but 'rather a broad range of theories which constitute the logic of clusters'

There are elements of three theories and models of development Porter's clusters, industrial districts and regional systems of innovation that offer explanations as to why firms have clustered in North Dublin and indeed why they have not. It should be noted however, that there are a number of other theories which come under the umbrella of these three related streams of literature

While Porter's theory in general does not fit neatly into local and regional analysis of Irish industry (see Chapter 2 and Section 3 4 1 in Chapter 3 as to why this is) there are some fundamental elements of his theory that explain the motivation behind certain co-operative processes in North Dublin. For Porter (1998), 'a higher order advantage in the hierarchy of sources of competitive advantage in terms of sustainability' is the external relationships that a firm has with other firms. The nurturing of and investment in inter-firm relationships is therefore motivated by a desire to achieve some kind of competitive advantage. This is true of the leader firm-supplier partnership in the fish-processing sector and of the consortium of firms in the printing sector. While Porter comments on the facilitating conditions for the formation of clusters his emphasis is more on clusters as a whole rather than its constituent firms. Where Porter's theory falls short the industrial district literature and to a lesser extent (in this case) the literature on innovation bridges the gap in understanding the reasons for and processes of clustering as presented in North Dublin. Where clustering is absent (i.e. in the bakery sector) the industrial district literature has also provided theoretical reasoning.

In the fish-processing sector there is a mix of co-operative forms (both vertical and horizontal) that can be explained by both the "old" and "new" or evolving literature on industrial districts. The horizontal co-operation among co-located firms is co-ordinated organically in that shared values and norms of economic behaviour regulate

interaction and allow for the sharing of commercial information. Furthermore, the collective action that is characteristic of inter-firm relationships in industrial districts is also present among processors in Howth. The co-operatively competitive environment in which firms operate can be attributed to the particular set of conventions and social trust that are both historical and familial in context. The industrial district literature tells us that specialisation further contributes to co-operative competition. Among fish processors in North Dublin there is a degree of specialisation that has facilitated the sharing of inputs i.e. co-operative processes.

The new industrial district literature, in particular the leader firm literature has enabled us to explain the reasons for and processes involved in the partnership between Oceanpath and Superquinn and to highlight it as a mode of economic co-ordination and development (see Chapter 7). Linking the industrial district literature to the literature on innovation we have been able to highlight Superquinn (the leader firm) as a “budge firm” i.e. the source of technical know-how for its supplier, Oceanpath, and as an enhancer of its supplier’s configurational capabilities in innovation processes.

To explain the reasons for and processes involved in the printing sector’s PCI, inter-organisational theory under the umbrella of the industrial district literature has enabled us to identify the reasons or motivating conditions for relationship formation (see Sections 8.3 and 8.7 in Chapter 8). However, trust – the basis of inter-firm co-operation in industrial districts – is identified as a facilitating mechanism. By relating firm behaviour (i.e. *gruppi*) in the industrial district of Prato, Italy to PCI firm behaviour we can understand more about why structured co-operation has emerged in the sector. The industrial district literature stresses that non-firm organisations (e.g. trade associations) have a special role to play in supporting and underpinning inter-firm co-operation. We have shown that it has been essential in the case of the PCI. Without a shared institutional environment, inter-personal trust, upon which the consortium was initially co-ordinated, would not have been fostered. What this tells us is that the alliance formation and its subsequent successful co-ordination would not have been possible without the presence of “institutional thickness”. As with the fish-processing sector, the inter-firm dynamics documented in the PCI have greater meaning when compared to inter-firm dynamics documented elsewhere i.e. Italian

industrial districts. Furthermore, without the study and application of industrial district literature to these case studies, we would not have fully explored the nature of inter-firm dynamics and therefore would not have fully understood the patterns of development in these sectors.

In the bakery sector, one explanation for the lack of clustering – i.e. co-operative inter-firm relationships – comes somewhat paradoxically from the industrial district literature. As stated in Section 9.2 in Chapter 9, this literature accords a central role to non-economic forces, such as conventions and norms, in shaping industrial development. Advanced forms of co-operation found in the Italian industrial districts are thought to be underpinned by the social community, which upholds supportive sets of values. There are some suggestions, however, that in a small minority of cases the reverse is also true. In other words, that non-co-operation is maintained by a social community, which upholds values of opportunism, rivalry and/or destructive competition (Paniccia, 1998). By applying this logic to inter-firm dynamics in the bakery sector, we understand why firms choose to act as stand-alone rather than networked entities. The emergence of bureaucratic networks in the bakery sector has also been related to the industrial district literature – showing that “leader-firms” do not always have a positive impact upon their sub-contracting suppliers, particularly when relational contracting is avoided.

Each of the case study chapters (7, 8 and 9) describes in detail the different theories that best explain clustering or non-clustering. The above offers a summary of what has already been discussed.

## **10.5 Summary of Contribution to Knowledge**

Although research has previously been conducted on local and regional clustering in Ireland using an alternative framework to that of Michael Porter's, namely an approach based on the industrial district literature, this thesis is the first to examine, in Ireland, all of a local economy's industrial sectors for cluster activity. Moreover, the framework for examination and analysis is broader than any other previously used as it has combined a number of related streams of literature.

Individually, the three case studies contribute to knowledge of inter-firm dynamics specific to a location and a sector. By comparing and contrasting the nature of inter-firm relationships in the three sectors – fish processing, printing, and bakery, we identify the causes of disparate trajectories in firms' interactive processes. Although these findings cannot be generalised they make a significant contribution to knowledge by building on and adding to existing cluster theories.

Furthermore, our acknowledgement that clusters are not a feature of every local and regional economy has enabled us to contribute to knowledge of how and why clusters fail to emerge detailing the sectoral (transactional) and locational (contextual) factors at play.

The end result is a piece of work that adds significantly to knowledge of local economic development in Ireland. In the context of current enterprise and cluster development policies (see Section 3.3.2 Chapter 3) and the history of over-reliance on foreign owned multinational enterprises (MNEs) for economic development, the findings of the fish processing and printing case studies (Chapters 7 and 8) show that economic development is possible based on co-operation among indigenous firms without MNE involvement.

## **10.6 Suggestions for Further Research**

Further research should explore inter-firm dynamics in the fish processing, printing and bakery sectors in local and regional locations, other than North Dublin. The replication of case studies in other regional locations would mean that theories developed herein could be supported, refined or adapted. In doing so, these additional case studies would contribute to a process of cumulative theory formation.

There is significant scope for further research on inter-firm dynamics in non-manufacturing sectors such as financial services and internationally traded services – both of which display significant concentrations in North Dublin (as per Chapter 5). It was not possible to explore these herein as the parameters of this study would not permit it.

## Chapter 11: Conclusions

- 11 1** The post-Porter approach adopted in this dissertation has enabled us to reveal, at a local level, previously unknown characteristics of three sectors of industry. The combined quantitative and qualitative approach to identification together with the qualitative approach to evaluation (based on three streams of related literature) has facilitated much more in-depth analysis of inter-firm relationships than if a single model or Porterian approach had been relied upon.
- 11 2** The inter-firm relationships described in the fish processing and printing case studies highlight the merits of collective rather than independent action. In development terms the findings of these two case studies are significant. First because the co-operative links involved are between and among indigenous firms. Given Ireland's and indeed North Dublin's history of over-reliance on foreign MNEs for employment and development it is important that indigenous industry strengthens itself. Second, development agencies have historically favoured linkages between indigenous firms and foreign owned firms for development. While we agree that such linkages are important we suggest a more balanced approach to industrial development. The case study findings show that it is possible, through co-operative links among a group of indigenous firms, for companies to innovate, grow (e.g. the partnership between Oceanpath and Superquinn in the fish processing sector) and win new market share (e.g. the PCI in the printing sector).
- 11 3** The distinct lack of co-operation among firms in the bakery sector highlights that spatial concentration of firms does not automatically imply cluster activity i.e. some co-operative interconnectivity between firms. In fact co-operation was found to be largely negligible among firms in some sectors identified as having a high spatial concentration in North Dublin.

114 The role that a shared location has played in shaping the buyer-supplier partnership in the fish processing sector and the alliance in the printing sector differs from the way it is generally prescribed in the cluster literature. Trust, upon which the PCI was formed, was fostered in a shared organisational environment rather than a spatial one. Through joint participation and service in the industry's representative organisation – IPF – relational exchange between and among the firms' managing directors led to interpersonal trust. It is possible therefore, in theory, for the five PCI firms to have been geographically dispersed and still to have forged an alliance.

In the fish processing sector the buyer-supplier partnership emerged less because of close proximity to one another and more because of a history of inter-personal links between individual buyers in the buyer firm and one of the co-founders of the supplier firm. However co-location has enhanced the degree of collaboration. Similarly, the spatial proximity between the PCI firms has facilitated the co-ordination of the alliance's physical operation e.g. arrangement of meetings, on-site visits (sharing of information) and the co-ordination of finishing and delivery logistics.

A shared location has however, been integral to the development of horizontal co-operative links in the fish processing sector. Almost daily interaction between firms' employees and owners/managers at the local fish auction has created an environment where information (commercial) is shared.

115 We found that leader firms can have both a positive impact (in the fish processing case study) and a negative impact (in the bakery case study) on their suppliers depending upon how the relationship is co-ordinated. In the former the leader firm has significantly enhanced the supplier's *innovation enabling capabilities* as well as facilitating new custom. In the latter bureaucratic co-ordination without room for mutual adjustment has limited the extent to which knowledge can be exchanged as 'learning by interacting' has been impeded by contractual obligations.



- 11 6 Supporting organisations can play an important role in fostering co-operation. In the print sector the common value system has promoted core values of secrecy and rivalry however a sub-system for the creation of common values is engendered in the industry representative organisation that acts as a vehicle for characteristic, institutional and knowledge based trust. Where rivalry exists at supporting organisational level (as in the bakery sector) there are difficulties in creating such a sub-system.
- 11 7 The failure of bakery firms to co-operate is due to a number of factors and the interplay between them. The conventions (rules of play) under which firms operate propagate a set of industry values i.e. secrecy and rivalry. In other words they provide the *context* within which all transactions are conducted. Intertwined with this set of conventions is the way in which firms compete with one another. Competition based on price has reinforced inter-firm rivalry. Trade associations are incapable of providing a new co-operative context due to the fact that inter-organisational rivalry permeates the two trade associations. In the absence of a collective or integrated approach to industry needs the “distance” between firms is further promoted.
- 11 8 An analytical framework based on the concepts of *contextual* and *transactional* environments has enabled us to identify the causes of disparate trajectories in firms’ interactive processes. The different contextual environments in each of the sectors have shaped the various outcomes i.e. inter-firm relationships. Structural differences in each of the sector’s transactional environments have however also played a role. It can be concluded therefore that differences in inter-firm dynamics are attributable to interplay between these two environments in each of the sectors.

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## Appendix A

### List of District Electoral Divisions (DEDs) included in the study

CSO No	Fingal
1	Airport
2	Ballbriggan Rural
3	Balbriggan Urban
4	Baldoyle
5	Balgriffin
6	Balyboghil
7	Balscadden
8	Blanchardstown-Abbotstown
9	Blanchardstown- Blakestown
10	Blanchardstown Coolmine
11	Blanchardstown- Corduff
12	Blanchardstown -Delwood
13	Blanchardstown - Mulhudart
14	Blanchardstown-Roselawn
15	Blanchardstown- Tyrelstown
16	Castleknock -Knockmaroon
17	Castleknock - Park
18	Clonmethan
19	Donabate
20	Dubber
21	Garristown
22	Hollywood
23	Holmpatrick
24	Howth
25	Kilsallaghan
26	Kinsaley
27	Lucan North
28	Lusk
29	Malahide East
30	Malahide West
31	Portmarnock North
32	Portmarnock South
33	Rush
34	Skenes
35	Sutton
36	Swords-Forrest
37	Swords-Glasmote
38	Swords-Lissenhall
39	Swords-Seatown
40	SwordsVillage
41	The Ward
42	Turnapin

<b>CSO</b>		<b>CSO</b>	
<b>No</b>		<b>No</b>	
1	Arian Quay A	57	Finglas South D
2	Arian Quay B	58	Grace Park
3	Arian Quay C	59	Grange A
4	Arian Quay D	60	Grange B
5	Arian Quay E	61	Grange C
6	Ashtown A	62	Grange D
7	Ashtown B	63	Grange E
8	Ayfield	64	Harmonstown A
9	Ballybough A	65	Harmonstown B
10	Ballybough B	69	Kilmore A
11	Ballygall A	70	Kilmore B
12	Ballygall B	57	Finglas South D
13	Ballygall C	58	Grace Park
14	Ballygall D	59	Grange A
15	Ballymun A	60	Grange B
16	Ballymun B	61	Grange C
17	Ballymun C	62	Grange D
18	Ballymun D	63	Grange E
19	Ballymun E	64	Harmonstown A
20	Ballymun F	65	Harmonstown B
21	Beaumont A	66	Inns Quay A
22	Beaumont B	67	Inns Quay B
23	Beaumont C	68	Inns Quay C
24	Beaumont D	69	Kilmore A
25	Beaumont E	70	Kilmore B
26	Beaumont F	71	Kilmore C
27	Botanic A	72	Kilmore D
28	Botanic B	73	Mountjoy A
29	Botanic C	74	Mountjoy B
30	Cabra East A	75	North City
31	Cabra East B	76	North Dock A
32	Cabra East C	77	North Dock B
33	Cabra West A	78	North Dock C
34	Cabra West B	79	Phoenix Park
35	Cabra West C	80	Priorieswood A
36	Cabra West D	81	Priorieswood B
37	Clontarf East A	82	Priorieswood C
38	Clontarf East B	83	Priorieswood D
39	Clontarf East C	84	Priorieswood E
40	Clontarf East D	85	Raheny-Foxfield
41	Clontarf East E	86	Raheny-Greendale
42	Clontarf West A	87	Raheny-St Assam
43	Clontarf West B	90	Whitehall A
44	Clontarf West C	91	Whitehall B
45	Clontarf West D	92	Whitehall C
46	Clontarf West E	93	Whitehall D
47	Drumcondia South A		
48	Drumcondia South B		
49	Drumcondia South C		
50	Edenmore		
51	Finglas North A		
52	Finglas North B		
53	Finglas North C		
54	Finglas South A		
55	Finglas South B		
56	Finglas South C		



**Appendix B**  
List of Interviews Conducted

<b>Name of Interviewee</b>	<b>Organisation/Company</b>	<b>Position within Organisation/Firm</b>	<b>Date of Interview</b>
Michael Galvin	Fingal County Council	Head of Development	October, 2002
John O'Dea	Enterprise Ireland	East Regional Manager	October, 2002 April, 2003
Conor Agnew	IDA	East Regional Manager	October, 2002
Anne Marie Farrelly	Fingal County Council	Coordinator of Edge Cities Network Initiative	April, 2003
Tom Kennedy	Enterprise Ireland	Head of Linkages	May, 2003
Gus Jones	IDA	Head of Financial and Internationally Traded Services	June, 2003
Teri Smith	Enterprise Ireland	Development Advisor – Fish Processing	June, 2003
Deirdre Craven	Enterprise Ireland	Development Advisor – Financial Software	June, 2003
Linda Crosbie	Enterprise Ireland	Development Advisor – Financial Software	June, 2003
Breege Kennedy	Enterprise Ireland	Development Advisor – Paper Print & Publishing	July, 2003 December 2004
Susan Byrne	Enterprise Ireland	Development Advisor – Paper Print & Publishing	July, 2003
Una Cahalan	Enterprise Ireland	Development Advisor – Bakery Foods	July, 2003 January 2005
Seamus	Enterprise Ireland	Development	July, 2003

MacLoughlin		Advisor – Bakery Foods	
Biendan Logue	IDA	Head of International Financial Services Centre	July, 2003
Oirlagh Murphy	Enterprise Ireland	Development Advisor - Electronics	July, 2003
Jim Lawler	Enterprise Ireland & Federation of Aerospace Enterprises in Ireland	Director of AMT Ireland & Secretariat of FAEI	August 2003
Ken Ecock	Oceanpath	Director and Business Relations Manager	August 2003 September 2004
Darren Wright	Wrights of Howth (Simro)	Managing Director	September 2003
Brian Kelly	Superquinn	Buyer	November 2004
Geraldine Lane	Bord Iascaigh Mhara (BIM) – Irish Sea Fisheries Board		November 2004
Catherine Morrison	Bord Iascaigh Mhara (BIM)		November 2004
Collette Crowne	Bord Iascaigh Mhara (BIM)		November 2004
Loicán O'hObain	Printing Consortium of Ireland	Managing Director	December 2004
Pat Garvey	Flour Confectioners & Bakers Association (FCBA)	Secretary & Public Relations Officer Programme Manager of Bakers and Confectioners Skillnet	January 2005
Eamonn Manning	Manning's Bakery	Director	January 2005
Patricia Manning	Golden Bake Ltd	Sales and Marketing Manager	January 2005

Kevin Craven	Kylemore Bakery	Operations Manager	January 2005
Yolanda Coghlan	Coghlan's Bakery	Financial Controller	January 2005

## **Appendix C**

### Interview Questions

## Questions for Superquinn

### 1 Superquinn Supplier Partnership (SSP)

a) What influenced the development of the SSP?

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b) Upon what criteria were the 10 partners selected?

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c) How have Superquinn benefited from the supplier partnership? (Detail tangible and intangible benefits)

---

d) Describe how the partnership is managed?

---

e) Is there a structure/forum whereby partners interact with one another? (Opportunities to learn from one another)

---

f) Is there an overall strategy to which all partners must adhere?

---

### 2 Superquinn and Oceanpath

a) It has been said that selection was based upon - Commitment Trust and Openness

How have Oceanpath demonstrated

i) Commitment

ii) Trust

iii) Openness

---

b) Did any other factors contribute to Oceanpath's suitability for partnership?

---

c) Commitment (in the SSP) has been described as "both sides fully committing all resources to an agreed change programme by a given time frame" Damien Carolan

iv) What was the agreed change programme for Oceanpath?

v. Have Superquinn chosen courses of action for Oceanpath?  
Have these courses of action developed Oceanpath's capabilities in Superquinn's opinion

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vi. Have Superquinn directed Oceanpath's capital investment programme?

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vii. What was the time limit for change? (Has the change programme been completed?)

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viii. What Superquinn resources were committed to the change programme?

---

---

d. How is Oceanpath's performance measured?

---

e. Is there a review process for the partnership?

---

f. How has geographical proximity facilitated the relationship?

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g. What controls do Superquinn maintain over

- i. Production
- ii. Value added product development
- iii. Internal organisation

h. Detail the number of individuals in Superquinn who have contact (face to face meetings, telephone, e-mail etc), with individuals in Oceanpath. (detailing the role of individuals in each of the firms)

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i. Specify the type of contact, the frequency of such contact and purpose (i.e. what kind of information is exchanged?)

---

---

k. How do Oceanpath fit into Superquinn's business system?

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l. What are the benefits to Superquinn of its partnership with Oceanpath? (Detail tangible and intangible)

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### 3 Superquinn, BIM and Oceanpath

- a Describe Superquinn's role in the implementation of QSP internally and within Oceanpath?
- 
- b Describe the relationship between Superquinn and BIM?
- 
- c What changes have Superquinn had to make as a result of the QSP?
- 

### 4 Organisation and Strategy

- a What are Superquinn's goals and objectives in business?
- 
- b How do these relate to partner's goals and objectives?
- 
- c What is Superquinn's attitude to i) competition and competitors ii) suppliers iii) non-firm organisations
- 
- d Describe the business environment within which Superquinn operates?
- 
- e Detail the links Superquinn has or has had in the past with any other retailer, firm or non-firm organisation (see attached table)
- 
- f Have any of these links changed the way in which Superquinn operate?
- 
- g What research and development activities do Superquinn engage in?
- 
- h How might these be of benefit to Superquinn's partners?
-





Questions for Oceanpath – Interview 1

THE COMPANY

1 a) What is the origin of the firm (Brief History)? **Company was founded in 1991 where? How did it come to set up its operation in North Dublin in 1995?**

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1 b) What do you think are the main competitive advantages of your business?

---

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- |       |  |         |     |          |                          |
|-------|--|---------|-----|----------|--------------------------|
| i)    | Location (e.g. close to existing facilities) | not imp | imp | very imp | <input type="checkbox"/> |
| ii)   | Already established market                   | not imp | imp | very imp | <input type="checkbox"/> |
| iii)  | Skills of founder                            | not imp | imp | very imp | <input type="checkbox"/> |
| iv)   | Skills of employees (e.g. languages)         | not imp | imp | very imp | <input type="checkbox"/> |
| v)    | Innovative product or service                | not imp | imp | very imp | <input type="checkbox"/> |
| vi)   | Innovative delivery of product               | not imp | imp | very imp | <input type="checkbox"/> |
| vii)  | Equipment                                    | not imp | imp | very imp | <input type="checkbox"/> |
| viii) | Know-how                                     | not imp | imp | very imp | <input type="checkbox"/> |
| ix)   | Relatively low cost                          | not imp | imp | very imp | <input type="checkbox"/> |
| x)    | Knowledge of customers                       | not imp | imp | very imp | <input type="checkbox"/> |
| xi)   | Other (if yes, please specify)               | not imp | imp | very imp | <input type="checkbox"/> |

1 c) What do you see as the strengths and weaknesses of your location?

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---

PRODUCTS

2 a) What products are currently being produced?

---

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2 b) Have you launched any new products recently?

---

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2 c) What has caused new product development?

---

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Customer feedback  Changes in Input availability  Competitor Pressure

2 d) Has your firm received any awards/ prizes/accreditation/quality approval?

Yes No

Specify name and nature of award?

---

How did it come about?

---

#### EMPLOYEES

**You've indicated 20% skilled employees and 10% trainees in the questionnaire this accounts for 9 of the 28 employees - How would you describe the skills or work of other employees? - administration etc**

3 a) Have you experienced any problems in relation to availability of skilled employees?

---

3 b) Have you experienced any problems relating to staff turnover?

---

3 c) The non-national employees - what countries do they come from mainly?

---

#### PHYSICAL INPUTS

4 a) Who are your main suppliers?

4 b) Where are they located?

4 c) How long have they been your suppliers?

4 d) Are there any issues related to sourcing of inputs?

4 e) Have you formed any collaborative relationships with other processors on input sourcing?

4 f) Do you share information about inputs with local competitors?

#### SERVICES

5 a) What types of services do you outsource?

Eg packaging etc?

5 b) Who are the company's local service providers?

## PRODUCTION

6 a) Describe your production process?

---

6 b) Have you made any changes to the process since the firm formed?

---

6 c) If so, why did these changes come about?

---

influenced by customer needs - if so is that customer a local one?

---

6 d) Have you ever sub-contracted work out?

If so, to what firm

---

And on how many occasions?

---

6 e) Have you ever sub-contracted work-in?

If so, from what firm?

---

And on how many occasions?

---

## MARKETING AND PROMOTION

7 a) Is Marketing performed in house or by an out-sourced firm?

---

7 b) Have you ever entered into joint marketing ventures with competitors / customers? Yes No

If so, describe the nature of this joint venture?

---

8 c) How important is BIM to your firms business?

In what way does it offer support?

---

## DISTRIBUTION

9 a) How are your products distributed?

---

9 b) If your own fleet - is this shared with competitors?

Would it be something you would consider?

If not, why not?

---

## OUTPUTS

10 a) Who are the company's customers?

10 b) Where are they located?

10 c) How are customer relations maintained?

#### COMPETITORS

11 a) Who are your competitors?

11b) Where are they located?

#### CO-OPERATION AND NETWORKING

**We are interested in exploring the various ways that your firm works (or has worked in the last 5 years) together with other firms and or agencies/institutions in the fish processing sector or indeed related sectors**

12 a) For the purposes of your business, what firms do you have links with?

---

---

12 b) If you have links with firms, please describe the nature and importance of these links

---

---

TYPE OF LINK	IMPORTANCE			
	not imp	imp	very imp	<input type="checkbox"/>
Joint marketing	not imp	imp	very imp	<input type="checkbox"/>
Information-sharing (technical)	not imp	imp	very imp	<input type="checkbox"/>
Information-sharing (market)	not imp	imp	very imp	<input type="checkbox"/>
Joint approach to State agencies	not imp	imp	very imp	<input type="checkbox"/>
Joint approach to local authorities	not imp	imp	very imp	<input type="checkbox"/>
Sub-contracting in	not imp	imp	very imp	<input type="checkbox"/>
Sub-contracting out	not imp	imp	very imp	<input type="checkbox"/>
R&D partnerships	not imp	imp	very imp	<input type="checkbox"/>
Recruitment of skilled workers	not imp	imp	very imp	<input type="checkbox"/>
Alliances (one other firm)	not imp	imp	very imp	<input type="checkbox"/>
Alliances (two or more other firms)	not imp	imp	very imp	<input type="checkbox"/>
Joint ventures	not imp	imp	very imp	<input type="checkbox"/>
Pooling finance	not imp	imp	very imp	<input type="checkbox"/>

12 c) How would you describe the nature of these links Local (within 10 miles) regional, national, UK, International?

	Local	Reg	National	UK	Eur	Internat
Joint marketing						
Information-sharing						
Joint approach to State agencies						
Joint approach to local authorities						
Sub-contracting in						
Sub-contracting out						
R&D partnerships						
Alliances (one other firm)						
Alliances (two or more others)						
Joint ventures						
Pooling finance						
Others (please specify)						

12 d) For the purposes of your business, what agencies/institutions do you have links with?

Type of agency/institution	Name and location of agency/institution	
Research Institutes	_____	<input type="checkbox"/>
University/Regional Technical College	_____	<input type="checkbox"/>
Chamber of Commerce	_____	<input type="checkbox"/>
Government Agencies	_____	<input type="checkbox"/>
Skills/Training Organisations	_____	<input type="checkbox"/>
Business Associations	_____	<input type="checkbox"/>
Conferences/Trade Fairs/Workshops	_____	<input type="checkbox"/>
Other (if yes, please specify)	_____	<input type="checkbox"/>

12 e) Is your firm a member of any associations/ institutions? If yes, please specify

---



---

Chamber of commerce	<b>yes</b>	<b>no</b>
IBEC/SFA	<b>yes</b>	<b>no</b>
BIM		
Other business/ Industry association	<b>yes</b>	<b>no</b>
If yes, specify _____		
Other development group	<b>yes</b>	<b>no</b>
If yes, specify _____		

12 f) How did your links with firms evolve?

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12 g) What factors have prevented you from having more links with other firms?

Lack of perceived benefits	<b>not impt</b>	<b>impt</b>	<b>very impt</b>	<input type="checkbox"/>
Rivalry/loss of face in seeking co-operation	<b>not impt</b>	<b>impt</b>	<b>very impt</b>	<input type="checkbox"/>
Risk of losing know-how	<b>not impt</b>	<b>impt</b>	<b>very impt</b>	<input type="checkbox"/>
Risk of revealing financial Information	<b>not impt</b>	<b>impt</b>	<b>very impt</b>	<input type="checkbox"/>
No suitable partner available	<b>not impt</b>	<b>impt</b>	<b>very impt</b>	<input type="checkbox"/>
Co-ordination costs too high	<b>not impt</b>	<b>impt</b>	<b>very impt</b>	<input type="checkbox"/>
All problems can be solved internally	<b>not impt</b>	<b>impt</b>	<b>very impt</b>	<input type="checkbox"/>

13 a) Are you a member of any formal (contractual) business Networking or Partnership initiative (whether private or established by a government or EU agency)?

**yes**    **no**

If yes, please provide details \_\_\_\_\_

---

13 b) In your opinion would your business benefit from establishing links (or additional links) with other firms (e.g. in sharing machinery, developing infrastructure, sharing information, joint marketing)?

**yes**

**no**

Please explain briefly \_\_\_\_\_

---



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13 c) What do you think these benefits might be?

---

---

13 d) If in the past your firm had links with other firms and/or agencies, but no longer does so, please explain

---

---

---

13 e) Is there anything in your opinion which could be done to improve the conditions for the building of linkages?

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## Questions for Oceanpath – Interview 2

### 1. Production process - Change and development

#### The system and changes made

- a) Describe initial production system in 1995 (from receiving inputs to delivering outputs)  
i.e. individual stages of production, what was involved and number of people required, output capacity.

---

---

---

- b) When were changes made (year) and what were they? (a schedule of changes made is required, purchasing of systems, training on systems etc)

---

---

- c) Describe the production system as it is today

---

---

- d) What have these changes meant to Oceanpath? (capacity for production) In terms of production output, lead times for delivery of orders etc.

---

---

#### Understanding how change has been facilitated

- e) Where did technical know how come from in order to make these changes?

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- f) How has accreditation to various quality assurance standards changed the production process?

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- g) Describe the role that any person (internal/external) or other organisation (e.g. Superquinn, BIM, Enterprise Ireland) may have played in

- i) Influencing change
- ii) Assisting change
- iii) Implementing change

---

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## 2 Products – Change and Development

- a) Detail the products Oceanpath produced initially in 1995
- 
- b) Detail the products Oceanpath produces today
- c) List the added value products Oceanpath produce noting when production began and plans to launch new value added products
- 
- 

### Understanding change

- d) Why were value added products developed?  
(where is knowledge acquired?)
- 
- e) What process is/was used to develop new value added products? (from product idea to product launch)
- 
- f) Describe the role any person (internal/external), or other organisation (e.g. Superquinn, BIM, Enterprise Ireland) may have played in
- i) Influencing change
  - ii) Assisting change
  - iii) Implementing change
- 
- 
- 

## 3 Organisation – Change and Development

- a) Describe Oceanpath's internal structure  
Individual's roles within the company (how this has changed since inception)
- 
- 
- b) Describe any organisational changes (including improvements made) that Oceanpath has gone through since inception
- In terms of
- i) Marketing
  - ii) Purchasing and distribution activities

- iii) Supply chain management
  - iv) Customer maintenance
  - v) Operation management
  - vi) Quality certification
  - vii) Planning processes
- 
- 

- c) Describe the role any person (internal/external) or other organisation (e.g. Superquinn, BIM, Enterprise Ireland, trade association, ) may have played in
    - i) Influencing change
    - ii) Assisting change
    - iii) Implementing change
- 
- 

#### **4 Inter-organisational relationships**

##### (1) The Superquinn- Oceanpath partnership

- a) Describe how the partnership came about?

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- b) What is it about Superquinn that makes them a suitable partner?

---
- c) How did geographical proximity between facilitate the establishment of the relationship? And how has it assisted in its maintenance?

---
- d) How has the relationship been of benefit to Oceanpath? (detail tangible and intangible benefits)

---
- e) Detail the number of individuals in Oceanpath who have contact (face to face meetings, telephone, e-mail etc), with individuals in Superquinn (detailing the role of individuals in each of the firms)

---
- f) Specify the type of contact, the frequency of such contact and purpose (i.e. what kind of information is exchanged?)

---

##### Trust between Oceanpath and Superquinn

Is this a formal or informal relationship? (Is there a contract?)

If there is a contract

- i) Is it for a fixed term?
- ii) Is it subject to certain performance indicators/ standards?
- iii) Is there a review process?
- iv) Is it documented as to how the partnership will operate?
- v) Is there group decision making?

(2) Relationships with Suppliers

- a) What is the nature of relationships with suppliers? (formal/informal)
- b) Describe how the relationship was initiated and how it is maintained
- c) How are suppliers selected?
- d) In what way is there trust between Oceanpath and Suppliers (as some suppliers are also fish and seafood processors in their own right)
- e) Who in Oceanpath has contact with Suppliers and what is the nature of this contact?
- f) Has Oceanpath ever shared information (technical or market based) with suppliers?
- g) If so, describe how this has happened
- h) Have any suppliers shared information (technical or market based) with Oceanpath?  
If so, describe how this has happened
- i) The ability to source new products was mentioned as one of Oceanpath's competitive advantages at the previous interview. How is this achieved? (As all firms have access to the same co-ops/ fish auctions etc)

(3) Relationships with non-firm organisations

- a) What is the nature of relationships with non-firm organisations (e.g. BIM, Enterprise Ireland, trade associations)

5 Social and Business Community
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- a) Describe Oceanpath's attitude to i) competition and competitors ii) customers iii) suppliers iv) non-firm organisations
- b) Describe the business environment within which Oceanpath operates?

- c) Describe the type of interactions individuals from Oceanpath may have with other firms at
  - i) Fish auctions
  - ii) Trade fairs
  - iii) Conferences
  
- d) How is any knowledge gained at these events put to use in Oceanpath?

## BIM (The Irish Fisheries Board) Questions

- 1 What role does BIM play in supporting and developing seafood processors?  
(i.e. what types of links do BIM have with seafood processors and how intense are those links)
- 2 What role has BIM played in Oceanpath's development?
- 3 Describe the business environment within which seafood processors operate?
  - (i) Structure of the industry
  - (ii) Economic climate
  - (iii) Intensity of competition
  - (iv) Accessing markets
  - (v) Co-operation/rivalry
- 4 What are the main characteristics of Irish seafood processing firms?  
In terms of
  - (i) Size
  - (ii) Level of automation
  - (iii) Levels of co-operation amongst fish processors
  - (iv) Levels of innovation

BIM and Oceanpath
-------------------

- 5 How would you rate Oceanpath in terms of the following
  - (i) As a seafood processor
  - (ii) Its production system
  - (iii) Its traceability system
  - (iv) Its quality assurance
  - (v) Its value added range
- 6 Describe the links between BIM and Oceanpath

BIM, Oceanpath and Superquinn
-------------------------------

- 7 How did QSP come about?
- 8 Describe
  - (i) The development process

- (ii) Specifications (e.g. are there certain standards of processing required in order to qualify for QSP?)
  - (iii) Implementation
  - (iv) Procedures for maintaining the standard
- 9 Describe the relationship between BIM and Oceanpath in the implementation of the QSP standard
- 10 What kind of supports (past or on-going) do BIM provide Oceanpath and Superquinn with in regard to the QSP? (e.g. training)
- 11 Describe the relationship between BIM and Superquinn

## Questions for Print Consortium of Ireland

### 1 Evolution

- a) What circumstances lead to the consortium's establishment? (Rationale for initiation)
- b) Where did the idea of a consortium originate (was it a particular individual's idea or the idea of a number of individuals within a number of firms?)
- c) What factors influenced partner choice? (Firm reputation, management reputation, geographical proximity)
- d) Were there any pre-existing relationships between the five member firms?

### 2 Operation

- a) Describe the governance structure for the management of the consortium?  
–From acquisition of contracts to execution and completion of projects
- b) How are the firms' resources pooled together? And what resources are involved? (E.g. financial, physical, managerial, human, organisational and technological)
- c) How has geographical proximity between member firms facilitated the operation and management of contracts?
- d) Describe the type of interaction that takes place between member firms
- e) How frequently do member firms interact with one another?
- f) How is trust exhibited between member firms?

### 3 Performance

- a) How successful has the consortium been (in terms of contracts won)?
- a) What are the consortium's collective strengths?

4	Business Environment
---	----------------------

- a) Describe the business environment within which the consortium operates  
Commenting on the scale of the industry, the market, competitive pressures,  
supporting organisations, technological change etc



## Questions for the Flour Confectioners and Bakers Association (FCBA)

### 1 Business Environment

- a) Describe the business environment within which bakery firms operate  
Commenting on
- (i) The scale of the industry,
  - (ii) The market (are there any entry barriers?)
  - (iii) Competitive pressures,
  - (iv) Supporting organisations,
  - (v) Technological change,
  - (vi) Levels of innovation,
  - (vii) Skills,
  - (viii) Rules of play
  - (ix) Rivalry
  - (x) Co-operation between firms and between firms and supporting organisations
- b) What are the main changes the industry has experienced in the last 20 years? How have these changes affected the way in which firms operate?

### 2 Bakery Firms

- a) Describe the typical bakery firm in terms of scale and structure
- b) Describe the typical production process – turnaround times etc
- c) Describe the type of relationships firms have with suppliers
- d) Describe the type of relationships firms have with buyers
- e) Describe the type of relationships firms have with supporting organisations
- f) How useful are supporting organisations
- g) How are big players like Cuisine de France changing the way firms do business

### 3 FCBA

- a) What is the function of the FCBA?
- b) Has the FCBA any links with North Dublin bakery firms?

Of the 45 firms assisted on the skillnet programme how many are North Dublin based?  
(What is the profile of the typical firms assisted?)

## Questions for Bakery Firms

### 1 The firm - general

- a) Give a brief history of your firm
- b) What products does your firm currently produce?
- d) What do you think are the main competitive advantages of your business?
- c) Have any new products been launched on the market recently? If so what influenced new product development?
- f) What might inhibit the development of new products?
- g) Has your firm received any awards/ prizes/accreditation/quality approval?

### 2 The firm – change and development

- a) What changes has your firm gone through since its inception?  
In terms of
  - Production process
  - Organisational structure
  - Product lines
- b) Have external factors influenced change in any of the above. If so, how?

### 3 External Relationships

- a) Describe the relationship that your firm has with suppliers (Formal/informal)?
  - b) Are suppliers local, national, international? (Is proximity to suppliers important?)
- c) Describe the relationship that your firm has with Customers/buyers (Formal/informal)?
- d) Describe the relationship that your firm has with supporting organisations (i.e. trade associations, development agencies etc)? How have they been of assistance to your business?
- e) Describe the relationship that your firm has with other bakery firms?
- e) In your opinion would your business benefit from establishing links (or additional links) with other firms or supporting organisations?

4	Training
---	----------

- a) Have you experienced any problems in relation to availability of skilled employees?
- b) Have you experienced any problems relating to staff turnover?
- c) Has the Flour Confectioners and Bakers Association Skillnet Programme been of any assistance to your firm?

5	Business Environment
---	----------------------

- a) Describe the business environment within which your firm operates  
Commenting on
  - (i) The scale of the industry,
  - (ii) The market,
  - (iii) Competitive pressures,
  - (iv) Production cycles
  - (v) Technological change etc
  - (vi) Skills

## Appendix D

### List of Key Companies in North Dublin

#### *Key firms in fish processing sector*

<b>Firm Name</b>	<b>Size*</b>	<b>Location</b>
Dunns Seafare Ltd	Small	Jamestown Business Park, Finglas, Dublin 11
Oceanpath Ltd	Small	9A & 11A West Pier, Howth, Co Dublin
Rockabil Shellfish	Small	Stephenstown Industrial Estate, Balbriggan, Co Dublin
Simro Ltd (Wrights of Howth)	Small	14 West Pier, Howth, Co Dublin

<10 = small, 10-49 small, 50-249 Medium, > 250 Large

#### *Key firms in Bakery Sector*

<b>Firm Name</b>	<b>Size*</b>	<b>Location</b>
Coughlan's Bakery	Small	Blackhorse Industrial Estate, Dublin 7
Dunhill's Confectionery Production Ltd	Medium	McKee Avenue, Finglas, Dublin 11
Golden Bake Ltd	Small	Malahide Road Industrial Park, Dublin 17
Kylemore Bakery Ltd	Large	McKee Avenue, Finglas, Dublin 11
Mannings Bakeries Limited	Small	Greencastle Parade, Coolock, Dublin 17

#### *Key firms in Paper print and publishing*

<b>Firm Name</b>	<b>Size*</b>	<b>Location</b>
Alluset Ltd	Medium	Dublin Industrial Estate, Glasnevin, Dublin 11
Cahill Printers	Medium	East Wall Road, Dublin 3
Colourbooks	Small	Baldoyle Industrial Estate, Dublin 13
Numan Limited T/A BetaPrint	Small	Malahide Road Industrial Estate, Dublin 17
Smuifit Web Press	Medium	Botanic Road, Glasnevin, Dublin 9
Clonliffe Print Ltd	Small	Phoenix Industrial Estate, Navan Rd, Dublin 7
Dakota Packaging Ltd	Medium	Airways Industrial Estate, Dublin 17
Dolland Packaging Ltd	Small	
Future Print	Medium	Baldoyle Industrial Estate, Dublin 13
Kenilworth Products Ltd	Medium	Dublin Industrial Estate, Glasnevin, Dublin 11
Multiprint Labels Ltd	Medium	Swords Business Park, Seatown, Swords
Playprint Sales Limited	Medium	Drumcondra, Dublin
Presswell Ltd	Small	Baldoyle Road, Dublin 13
Trilogie Limited	Small	Dublin Industrial Estate, Glasnevin, Dublin 11
Wood-Printcraft Ltd	Large	Malahide Road Industrial Estate, Dublin 17
Data Page Ltd	**	East Wall Road
Wilks Cerdac	**	Finglas, Dublin 11
Intercontinental Photo Composition Ltd	**	Dublin 17
Alpha Sign Nameplate & Decal Ltd	**	East Wall Road, Dublin 3
Coleridge Fine Arts	**	Malahide Road Industrial Estate, Dublin 17
Irish Box Print and Packaging	**	Artane
Plasweld Displays Ltd	**	Dublin 11

\*\* Not available