

The Development of the Software Manual Printing Sector In Ireland

This thesis is submitted to Dublin City University Business School for a Masters Degree in Business Studies. The preparation of this thesis has been supervised by Dr. David Jacobson. This thesis is based entirely on my own work, and has not been submitted in fulfilment of a degree requirement to any other University.

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I hereby declare that this material, which I now submit for assessment on the programme of study leading to the award of Master of Business Studies 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 acknowledged within the text of my work.

Signed David O'Fulivan Date 23. Sept 1993.

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ABSTRACT

'The Development of the Software Manual Printing Sector in Ireland'

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The printing of software manuals has become a very important and distinct subsector within the overall printing industry. This thesis sets out to examine the development of this subsector by examining the market structure of the sector, identifying the competitive forces that exist and outlining the strategies adopted by the firms in the market.

The starting point for the thesis is an examination of the traditional structure-conduct-performance model and its relationship with the wider business policy field. This examination is elementary and serves to provide a very useful starting point. Next a specific framework is developed to examine the software manual printing sector. This framework concentrates on the dimensions of structure and conduct, with the causality flowing from structural criteria; conduct is equated with a firm's business strategy. The dimension of performance is reduced in importance, reflecting the view that performance is largely a matter for the individual firms; however performance does influence both conduct and structure.

Before examining the software manual sector an outline is provided of the printing and publishing industry (NACE 473/474). This outline highlights the broader industrial context within which the software manual printing industry has emerged.

The software manual printing sector is examined by means of the industrial organisation framework developed. This comprises two elements; an analysis of the market structure, along the dimensions of market definition, market concentration and entry barriers, and a review of the generic strategies adopted by the suppliers.

The thesis concludes with a number of industrial policy recommendations for this sector, and in particular it outlines that industrial policy is required for both traded and non-traded sectors.

"The intensity of competition in an industry is neither a matter of coincidence nor bad luck. Rather, competition in an industry is rooted in its underlying economic structure and goes well beyond the behaviour of current competitors"

Competitive Strategy. Techniques for Analyzing Industries and Competitors.

Michael Porter (1980, P. 3)

CHAPTER 1

The Structure - Conduct - Performance Paradigm

1.1 The Traditional Structure-Conduct-Performance Paradigm

The structure-conduct-performance (SCP) paradigm has traditionally been used as the basis for analysing the structure of an industry. This paradigm postulates that the performance in a market is determined by the conduct of the firms in that market, which in turn is determined by the structural characteristics of that market; thus performance can be determined by looking directly at that industry's structure and bypassing the firm's conduct or strategy (Figure 1.1). One of the main attractions of the SCP model is that it postulates the existence of certain causal relationships between the three elements of structure, conduct and performance and that such relationships will generally hold true in all markets.

The Traditional Structure-Conduct Performance Model

Structure \dashrightarrow Conduct \dashrightarrow Performance

Figure 1.1

As a model for analysing industries the traditional SCP approach is subjected to much criticism, which relates to two areas ;

1.1.1 The neoclassical basis of the SCP

1.1.2 The role of causal relationships

1.1.1 The neoclassical basis of the SCP

The SCP paradigm has as its basis the models of perfect and monopoly

competition, in which firms' objectives are to maximise profits subject to cost and revenue constraints. All forms of competition are thought to exist between the two polar points of monopoly (with only one firm) and perfect competition (with many small firms). As one moves along the spectrum, from perfect competition towards a monopoly situation, it is postulated that profitability will rise from the normal level towards the supernormal level at the monopoly stage (Sawyer, 1981, p. 9). At the monopoly end of the spectrum there is only one firm protected by very high entry barriers; these barriers insulate the firm from potential competition thereby allowing it to earn supernormal profits. At the other end of the spectrum the arena of perfect competition is characterised by a multiplicity of firms, similar in size, with no collusion, firms acting independently in determining both price and output, no firm able for any reason to influence price or output more than another, all firms using their existing resources equally as efficiently and an absence of any barriers restricting entry into the marketplace. In such a situation competition is deemed to be perfect, prices will tend towards marginal costs and normal profits will be earned.

These assumptions, of competition and profitability, fail to take into account the scenario where there are many firms unequal in size and resources (and in the effective use of these resources), where there are barriers to entry, where a degree of collusion between the firms is found and where competitors will react to counteract a move by any one firm. In particular, it makes no allowances for firms that become more cost efficient than their competitors. Demsetz (1973, p. 1-9) came to the conclusion that high profits may not be a sign of market power but of efficiency and accordingly low cost producers will tend to increase in size thus affecting the concentration levels (the pressure will be on all firms to be efficient and there will be a tendency for market concentration to increase). Demsetz thus argues that the market will develop into that which enables production and distribution to be undertaken at least cost.

The models of perfect competition and monopoly are static models where the consumers and producers are both perfectly informed (of both current and future states of the world) and their tastes are constant and as a result economic equilibrium is reached. Stigler (1963, p. 64) noted of this "if the entrepreneurs in a competitive industry correctly anticipated all relevant future events and if they were able to adjust their plans, no disequilibrium could arise; the market would be in full equilibrium at every moment of time". Many economists (particularly the Austrian theorists) argue that knowledge is partial and not perfect and that consumers are aware of their tastes but cannot possibly be aware of all taste combinations. Similarly while producers know the costs of their current production methods they do not know and cannot possibly know the costs associated with all possible alternative techniques. Likewise they (the producers) may only have a hazy impression of the true demand for their product.

As a static model the traditional SCP is only concerned with the position of equilibrium and not with how such a position was attained. Of this the Austrian economists assert that while the market may move in the direction of equilibrium this state will never be attained; instead the market will be in a continuous state of flux and as a result the Austrian theorists view any analysis of equilibrium as misplaced effort (Ferguson, 1988, p. 19). The understanding of how the state of equilibrium is reached is of fundamental importance in the understanding of an industry and Littlechilds (1986, p. 12) notes "Austrian economics sees the economic problem as including the discovery of consumer preferences, techniques and resource availability and sees the economy as involved in a continual process of discovery, co-ordination and change". Similarly Marshall's insight into this was very clear as early as 1920; "it is especially needful to remember that economic problems are imperfectly presented when they are treated as problems of statical equilibrium, and not of organic growth" (1920, p. 382). Phillips (1970) supported this view when he noted "that without consideration of the more complete and

endogenous relations among these variables, predictions covering any significant time period are quite likely to be wrong". Thus the structure - conduct-performance relationships can only provide a snapshot picture of the forces at work at a particular time, a more complete and fuller picture requires an examination of the evolution of industrial structure through time and of how conduct and performance influence structures, conduct and performance (Sawyer 1981, p 155).

The neglect of rivalry and competition between firms in the SCP arises from two sources (Sawyer, 1981, p. 158). Firstly, the approach is based on the premise that the models of perfect competition and monopoly are the extremes and that all industries can be placed along specific points of this continuum. Since rivalry is not involved in either extreme case, rivalry cannot be involved in the intermediate cases. Secondly, the approach is essentially concerned with a position of equilibrium, not with how it was derived. Rivalry on the other hand is of little importance in such positions since the point of equilibrium is a position of 'rest' after each firm has striven to achieve their best outcome. Rivalry exists in situations of disequilibrium and when the rivalry has been 'resolved' equilibrium is reached. However as a contrary view to this it could also be argued that what the SCP ignored was not the existence of rivalry but its importance in all industries' structures.

The SCP model views industry structure as being exogenously determined, it is determined by factors outside the influence of any one of the participating firms and/or it is a result of a series of historic accidents. Thus the firms in the market have no latitude to alter the industry structure through their strategy or conduct, hence the role of conduct is greatly minimised. In practical terms this means that the individual firms cannot alter, by means of their strategy (conduct), the barriers to entry into their market nor can they affect the industrial concentration levels by way of acquisition or merger. However, firms *can* affect or even deter entry into their industry by carefully choosing their strategies

(Spence, 1979, p 1-9; Salop, 1979, p 335-338).

The final neoclassical criticism relates to the conduct assumption running through the paradigm, that of profit maximisation. Where the decision makers have a degree of discretion over their companies' objectives this discretion can be used in many different ways including a departure from the goal of profit maximisation. Departures from this goal will lead to a different range of outcomes and such discretion is of vital importance to an organisation as it shapes the organisation and establishes goals, policies and procedures.

1.1.2 The Role of Causal Relationships

One of the attractions of the SCP model is the positing of causal relationships between the market structure and conduct in order to determine performance. Such relationships are the basis for giving the model practical application. Examples of such relationships would be that the greater the number of firms in an industry the more competitive it would be hence normal profit would be earned.

However, the causal relationships resulting from the model do not always proceed in the one direction nor are they simple relationships outlining clearly cause and effect. For example, a low level of profitability may induce certain changes in conduct such as a change in price tactics, in product policy or promotional expenditures. These changes may then affect market structure through decreasing product substitutability or changing the entry conditions. However falling profitability may also stimulate merger activity which too affects market structure. Thus, the complexity of multidirectional chain of events makes it very difficult to distinguish between cause and effect and this is further compounded when one change alters the markets which then sets in motion other changes (Howe, 1978, p. 85). Sawyer (1981) suggests that the single equation approach to structure-performance relationships is liable to be

misleading; the solution to this problem is the estimation of a set of simultaneous equations. Nelson (1974, p. 212) argues that contrary relationships may also hold true. For instance, poor profit performance may affect market structure forcing the exit of some firms and, conversely high profits may also alter structure by attracting the entry of new firms into an industry.

1.2 The Link Between Industrial Economics and Business Policy¹

Up to very recently industrial economics has had very little effect on the business policy concept of strategy, and business policy has had little effect on industrial economics, despite the increasing clear evidence that much promise for cross fertilisation existed. The reasons why such cross fertilisation has had limited impact, and in particular why industrial economics has not had a greater influence on the business policy field, owes more to the different scholarly traditions between the two areas than to the substance of any one particular economics model, such as the SCP approach.

The industrial economics field differs clearly in purpose, frame of reference and unit of analysis from the business policy field. Industrial economics is broader than business policy, examining the industry-wide factors influencing and influenced by what is being studied in the business policy area. Business policy is about helping individual firms attain their goals and it has always been focused on firms' 'distinctive competence' and on what provides the basis for such uniqueness. Industrial economics is about understanding the relationships among firms, industries and economies, and in some cases industrial economics provides governments with the means to prevent firms from attaining their goals. Industrial economics is concerned with uncovering structure/performance relationships that generally hold true, even if they

¹ The discussion that follows is largely drawn from Porter (1981, p. 609-619)

do not hold true in every industry and even if they are explained only by some variation in performance. The desire of industrial economics to advance public policy and improve overall economic welfare made such generalisations palatable.

The view of the decision-maker has been a major difference between the two fields. Industrial economics, by and large, viewed the firm as a single decision-making unit, making choices based on economic objectives.

Contrary to this, business policy places great stress on how the personality of leader, political process within the firm, and a broader range of possible objectives have a major impact on the firm's actual behaviour in the marketplace.

The static perspective and limited view of the marketplace were obstacles hindering the flow of information between the two specialisms. Industrial economics viewed structure as being stable and exogenously determined and the firm's strategy and performance were fully determined by this structure. Business policy has a long tradition of emphasising the insight and creativity that firms have exhibited in fundamentally changing their environment and competing in their industry, and from their perspective the key question was what makes structure the way it is .

The differences in purpose, frame of reference, unit of analysis and related assumptions made the business policy practitioners uncomfortable about embracing industrial economics theory. However, notwithstanding this, and in particular recognising that the SCP was not developed to help individual firms, latter day industrial economics theory is now a very useful tool for use in business policy. Such theory offers the basis for developing a systematic model for analysing an industry and assessing the nature of competition in that industry and it casts the spotlight on the crucial aspects of the firm's industry.

CHAPTER 2

TOWARDS AN INDUSTRY SPECIFIC FRAMEWORK

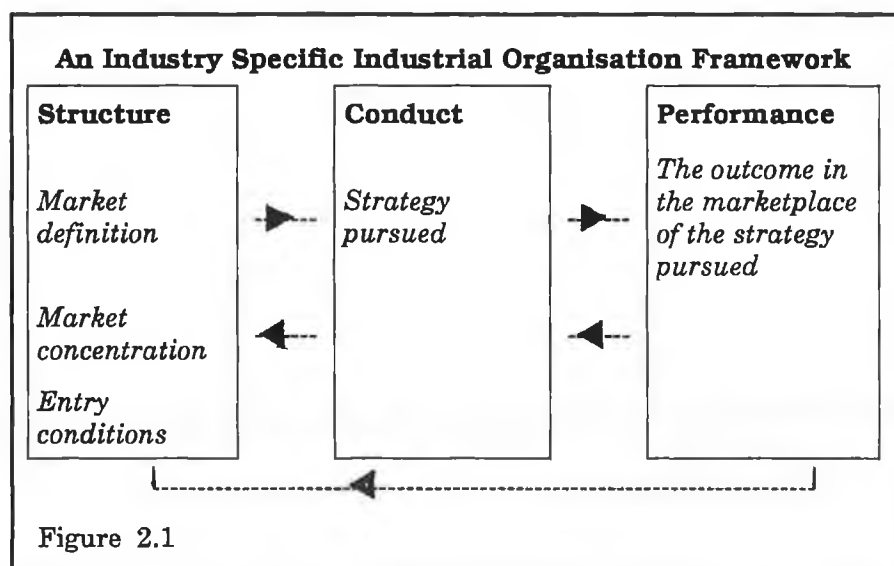
2.1 Introduction

The most fundamental point concerning any paradigm is to determine its purpose as it is naive and unrealistic to expect a single framework to be a panacea for all industrial economics or business policy ills. The revised framework outlined below has as its purpose the systematic analysis of the structural characteristics of a market, the assessment of how these characteristics influence the competitive dynamics within that market and the link between the competitive dynamics and the strategy adopted by the firms in the market. The framework does not seek to establish or prove any causal relationships nor does it subjectively assess the industry's overall performance against predetermined and socially desirable goals.

Using the traditional SCP as its base a revised framework postulates that the relationships among the three variables of structure, conduct and performance are complex and interactive (Martin, 1988, p. 7) and the causality still flows from the structural criteria (Ferguson, 1988, p. 11) (see Figure 2.1). The structural characteristics of the market will influence the behaviour of the individual firms and of firms collectively. These characteristics will also influence the strategic options available to the individual firms and based on the strategy chosen the firm should strive to insulate itself from the competitive forces by creating a sustainable competitive advantage. By measuring or monitoring its performance against a desired standard the strategy can be modified or altered to improve the performance.

The two primary dimensions of the revised framework are market

structure and conduct. The importance attached to the dimension of performance is greatly reduced. The definition of performance in this framework is Bain's (1968, p 9) 'the composite of end results which firms in any market arrive at by pursuing whatever lines of conduct they espouse'. Thus performance is not the performance of the industry as a single entity but the performance of the individual firms against their predetermined objectives. Based on the assessment of their performance individual firms may choose to alter their strategy (conduct) and this in turn will influence the market structure; thus performance directly influences conduct and indirectly influences market structure.



2.2 Structure

The definition of market structure in this framework is Kock's (1980, p. 90) 'the relatively permanent strategic elements of the environment of a firm that influence, and are influenced by, the conduct and performance of the firm in the market in which it operates'. Three key elements of industry structure are identified as;

- 2.2.1 Market Definition
- 2.2.2 Market Concentration
- 2.2.3 Entry Conditions

2.2.1 Market Definition

The question as to what comprises an industry or a market is one that has plagued economists for a long time, and equally business policy practitioners have long argued over the definition of certain businesses. In the theory of perfect competition the products supplied are homogeneous so there is no ambiguity and market definitions are clear and distinct. However, as soon as differences or flavours are introduced then the whole formulation of an industry becomes arbitrary and the relevant question is then at what point does one draw a line around a group of products and refer to it as an industry.

Lancaster (1966, p.132-157) postulates that what consumers desire are not the goods themselves but the characteristics or qualities embodied in those goods; thus a good should be analysed as a bundle of qualities or characteristics. This provides a clear means of delineating between markets; products with similar traits or serving the same end use can be considered as existing in the same market. However, through product differentiation a producer can differentiate his product, on a physical or psychological basis, from his competitor's so that although the goods may be competing in the same market they are no longer viewed as perfect substitutes for each other; thus the qualities or characteristics of both goods are now viewed by the consumer as being different.

The purpose of product differentiation is to insulate the firm from competition by reducing the alternatives available to the consumer thereby lowering the price elasticity of demand. Product differentiation represents a departure from the conditions of perfectly competitive markets and the effect of this departure is to create downward sloping demand curves for the products concerned so that even assuming freedom of entry the market will not operate in a completely efficient manner (Howe, 1978, p.58). Product differentiation is unlikely to totally insulate a product from competition as competitors may further differentiate their

product so that they can eliminate the original product, thus potentially there is no limit to the degree of differentiation that may occur. Few products have the advantage of complete price inelasticity. When the price of the product rises consumers will investigate what alternatives they can use, and for industrial goods, firms may change the way they operate in order to cater for the new product.

The firm must compete not just against products that are clearly in its market but also against substitute products, products which in the view of the consumer perform the same function as the original item and are viewed as fully interchangeable with the original item. Substitute products limit the potential returns of an industry by placing a ceiling on the prices firms can profitably charge.

The threat from substitute products may be a matter for the collective industry rather than a problem for individual firms. Substitute products that are most potent are those that have a more favourable price-performance trade off vis-a-vis the original industry's product and substitute products produced by firms earning higher profits (Porter, 1980, p. 23-24).

For the individual firm knowing what market they are competing in is vital to their success and survival as an enterprise. Only by knowing their market can they develop their mission statement, analyse their market structure and devise strategies to compete successfully in that sector. Market definition is the foundation upon which any industrial organisation framework is based. Each market sector has its own concentration levels, entry barriers and other forces that shape and influence the competitive process within that sector.

2.2.2 Market Concentration.

Having determined the particular market sector that a firm is operating

in the next stage is to review the competitors in that sector and their respective strengths and market share. Market concentration refers to the degree to 'which production for or in a particular market or industry is concentrated in the hands of a few large firms' (Clarke, 1985, p. 9). In measuring market concentration the concern is with an individual industry and the number and relative size of the firms in that industry as opposed to comparing one industry classification with another. A market is said to be more concentrated the fewer the number of firms in production or the more unequal the distribution of market share. The premise behind market concentration is that the more firms that exist in a market or the more equal the distribution of market share the more competitive that sector will be while the converse is also true.

Inequality in firm size or market share has serious implications for all the firms in an industry and for the efficient operation of that market as it reflects a move from perfect competition to a monopoly state. Sosnick (1958, p. 380-423) viewed the existence of an appreciable number of firms with no single firm being dominant as one of the characteristics of workable competition rather than perfect competition. Not only is the existence of inequality of market share or firm size critical to the understanding of an industry but the reasons behind such developments are of equal importance. Clarke (1985, p. 28-35) put forward two schools of thought relating to this. Firstly, there will be a determinate equilibrium level of concentration in a market at a point in time, determined by given demand and cost conditions and the behaviour of the market participants, and towards which the market will be continuously adjusting. Technological factors will play a key role in influencing this equilibrium by determining the efficient level of plant operations (minimum efficient scale relative to the market size). Accordingly, technological improvements by certain firms as illustrated by improvements in their scale economies will enable them to grow larger than their competitors. The assumption is that these improvements provide the firm with a lower selling price which attracts a greater

demand and/or the improvement increases the profitability of the firm. Thus high profits may not be a sign of market power but of greater efficiency vis-a-vis other players in the market (Demsetz, 1973, p.1-9). The deterministic approach is a long run approach given that in certain markets plant capabilities and capacities cannot be increased over a short period of time due to the leadtime required to acquire additional capital equipment. This approach only reviews the number of firms that can operate given cost and demand conditions; it does not specifically address the market share inequalities of market concentration.

The second approach proposed by Clarke (1985, p. 33) is the stochastic approach which focus on the issue of actual concentration changes. This approach postulates that the actual process of concentration change reflects the net effect of a multitude of uncertain influences affecting the decisions and growth rates of individual firms. These influences include exchange rate movements, the success of an advertising campaign, a new product release, a merger or a price war. The important aspect of the stochastic approach is not what these influences are but that each firm's performance in a particular period is likely to be uncertain because of the multitudes of influences at work. The approach thus argues that "chance plays a crucial role in explaining concentration level changes but that such change is not random but is subject to general rules. Each firm faces a given probability distribution of proportionate growth which is independent of size (the law of proportionate affect), if a number of firms are to face the same probability distribution of growth rates (which are independent of past growth rates) then the chance application of random variables will eventually produce a size distribution that is log normal, markets will become progressively dominated by fewer firms".

While the specific reasons behind the concentration levels is important this framework is more concerned with the results of market concentration and market share rather than with how it was achieved. While measures of market concentration are undoubtedly very important

care needs to be taken to choose the measure most appropriate to the area of the industrial structure that is being investigated as different measures will produce different results. Concentration measures are statistical artifacts only and they only take on a meaning from the theoretical justification for constructing them in a particular way (Hay and Morris, 1980, p. 208).

Within the overall area of market concentration the relative concentration levels of the buyer and seller groups and the concentration levels within these groupings is a critical feature. Together the two groupings form a distinct cluster, firms that are linked through vertical (buyer / seller) or horizontal (common customers, technology etc) relationships (Porter, 1990, p.148-149). Such linkages can exist between firms within the same industry or between firms in different but related industries. As linked enterprises one group influences the other and changes in one will have a profound effect on the other. Porter (1990, p. 151) states that "the cluster becomes a vehicle for maintaining diversity and overcoming the inward focus, inertia, inflexibility and accommodation among rivals that slows or blocks competitive upgrading and new entry. The presence of the cluster helps increase information flow, the likelihood of new approaches, and new entry from spin off, downstream, upstream and related industries". The phenomenon of clustering promotes the exchange and flow of information about the needs, techniques and technology among buyers, suppliers and related industries and it is the presence of entire clusters of industries that magnifies and accelerates the process of factor creation that is present when there is a group of domestic rivals. It is possible for clusters of connected industries and related firms to be a negative feature and a brake on innovation. Thus insular clusters may develop where firms, customers and suppliers only talk to each other (Porter, 1990, p.171). The dynamics of clustering may also work in reverse if firms are primary suppliers to, or otherwise connected to, the one or two industries in that cluster. The loss of one or all of these industries may well have a severe

impact on the entire cluster (Porter, 1990, p. 172). Thus geographical clusters are very vulnerable.

The link between the buyer and seller groups is usually thought of as being the actual transfer of goods/services in return for payment, however this can hide the strategic importance of the link. Dicken (1986) outlined the major impact areas of linkages between firms and in addition to the above link other impact areas include the type and extent of technology transfer and the effect the linkage/cluster has on the concentration level of that sector and on the competitive position within that sector. The interdependence between buyers and sellers may be more significant than the actual commercial link between them. In some instances entire seller groups may have dedicated their entire output (or a significant proportion) to one particular buyer group and such sellers are therefore entirely dependent on this one group; in other cases sellers are linked to their customers as part of an overall strategy while in others the buyers may be dependent on their suppliers because they have created a item or set standards which can only be supplied and attained by local suppliers.

In their own right buyers compete within an industry by forcing prices down, demanding higher quality standards, better customer service standards and by playing the sellers off against each other at the expense of their overall profitability level. Powerful buyers can actually limit the returns in the seller's industry; conversely sellers can exert bargaining power over the buyers by raising prices, reducing quality standards or lowering customer service levels. Powerful sellers can squeeze the profitability of the buyers' industry as well as reducing their ability to control and manage their raw material supply. A firm's choice of buyers (customers) or sellers (suppliers) is a crucial strategic decision; a firm can improve its strategic position by finding buyers / sellers who possess the least power to influence it adversely and who in turn they can manoeuvre for their own benefit. Equally a firm can benefit by choosing suppliers / customers that will have a positive influence on them by exposing them to

new ideas or technology and subsequent improvement.

A buyer group is considered to be powerful if the following circumstances hold true (Porter, 1980, p. 24);

- * It is more concentrated than the seller group and / or purchases large volumes relative to seller's sales.
- *The product it purchases from the seller group represents a significant fraction of the buyer's costs or purchases.
- *The product purchased is a standard product or is undifferentiated .
- *It faces few switching costs.
- *It earns low profits.
- *The buyers pose a credible threat of backward integration.
- *The industry's product is unimportant to the quality of the buyers's products or services.
- *The buyer has full information.

A seller group is considered to be powerful if the following apply (Porter, 1980, p. 27);

- *The seller group is dominated by a few companies and is more concentrated than the industry it sells to .
- *The seller's product does not contend with substitute products.
- *The buyer's industry is not an important customer of the seller's industry.
- *The supplier's product is an important input into the buyer's business.
- *The supplier group products are undifferentiated or have built in switching costs.
- *The supplier group poses a credible threat of forward integration.

Semlinger's (1991) work on the outsourcing industry (where outsourcing refers to the market procurement of formerly in-house produced goods and services from legally independent supplier firms) augments the

traditional view of the buyer-supplier relationships. While his work relates to one specific type of activity it does have significance for all forms of buyer-supplier relationships.

Semlinger (1991, p. 109) contends that the buyer-supplier relation striven for is one of 'autonomy and domination', that is suppliers are formally independent, but can nevertheless be stirred by the purchasing company which defines the 'terms of trade'. Autonomy to supplier units in this kind of relationship is granted in order to mobilise knowledge and creativity by making use of market incentives and competition as a discovery and selection device. Autonomy also achieves a second goal. It absolves the buyer from assuming responsibility for the outcome of the agreed conditions of exchange. Thus autonomy of the supplier under domination of the buyer makes better use of market features as a disciplinary device.

In addition, Semlinger's (1991, p. 99) view of modern purchasing policies is that they are moving in the direction of an "intensification of inter-company co-operation (between the buyer and seller)". However, essentially it is the supplier who adapts to the demands of the customer, with these demands increasing in number and standard; competitive price and continuing price decreases are taken for granted, expectations with regard to flexibility have increased with supply being carried out in shorter time frames and the deviations tolerated in terms of delivery dates, amounts delivered and product quality becoming narrower. The accompanying services now expected from suppliers include better financing arrangements, intensified quality monitoring and documentation, increased stockpiling and improved communication facilities. At the same time the number of suppliers is being continually reduced.

Interdependence in buyer-supplier relationships is not guaranteed. Mutuality exists only to the extent that the buyer and supplier are dependent on the sale of the final product. The buyer is only dependent

on the supplier to the extent that there is no better alternative supply. In order to increase the buyer's dependency the supplier has to improve its competitive performance and to adapt further to the customer's needs. Semlinger (1991) does contend that it is not it is not always possible for buyers to exploit their suppliers' 'passive flexibility', that is their pliability to external force; some suppliers may be of equal strength, or they may be indispensable, or they may have alternative opportunities at their disposal which allows them to refuse or withdraw from unfair contracting. Semlinger (1991) also contends that in some cases it may not be necessary for buyers to exploit their suppliers because of real advantages offered by the supplier in terms of productivity and 'active flexibility' that is versatility with regard to innovative options.

2.2.3 Entry Conditions

While there is widespread agreement that competitive entry (and exit) into an industry is a very important feature there is no agreed definition of a barrier impeding entry into a market. Entry conditions define a relationship between firms already established in a market and potential entrants into that market and they are a measure of the advantage possessed by established firms over potential entrants. It is the possibility or threat of new entrants into a market which eliminates long run monopoly profits; conversely it is the absence of such entry that allows supernormal profits to be earned.

Demsetz (1982) and Brozen (1975) sought to restrict the idea of entry barriers to government based restrictions to market entry. The basis for this is that entry barriers can arise only from government intervention because only the government has the legal power to prevent entry into a market. Without such intervention it is argued that the free workings of the competitive economy will eradicate monopoly rents in the long run and thus only governments have the power to prevent free competition. This definition is very narrow and places considerable faith in the

workings of the marketplace. Stigler (1968, p. 67) on the other hand views entry barriers as a cost of producing (at some or every rate) which must be borne by a firm which seeks to enter an industry but is not borne by firms already in that industry. Based on this definition, when established firms and new entrants face the same cost and demand conditions in a market then there is no barrier to entry. Bain (1968, p. 68) views a barrier to entry as reflecting 'the extent to which, in the long run, established firms can elevate their selling price above the minimal average cost of production and distribution (those costs associated with operating at optimal scales) without inducing potential entrants to enter that industry'. Bain maintains that there is a maximum selling price which firms can charge without inducing actual entry, the maximum entry forestalling price. This is measured numerically as the percentage by which the maximum entry forestalling price exceeds the minimum attainable average cost of established firms. A factor complicating this definition is that it implicitly assumes that those seeking to enter a market will be new (and small) firms. Andrews (1964) argues that entry is much more likely from established multiproduct firms which decide to diversify into a new market. Pickering (1974, p. 70-73) supports this views and notes that these firms are 'established' firms (albeit in another market) and will probably have access to financial resources, management ability, and technical commonality. Consequently the barriers preventing entry for established firms are likely to be much less than for entirely new enterprises.

A development strongly linked to the concept of barriers to entry is that of 'contestable markets' (Baumol, 1982). In a perfectly contestable market the incumbent firms are not protected in any way from potential entry. The market is completely open to potential competition, potential entrants would operate under identical cost conditions as the established firms and potential entrants are able to enter and leave the industry at no net cost. Under these conditions the established firms have little or no monopoly power. Baumol, Panzar and Willig (1982) have shown that, in

contrast to the perfect competition model, duopoly is sufficient to produce a perfectly contestable market. As a contributor to public and welfare policy this concept is very important as it places particular emphasis on potential rather than actual competition as a mechanism for resource allocation and as a consequence greater emphasis should be placed on increasing the contestability in markets rather than preventing concentration increases. From the individual firm's viewpoint it is to their advantage if they can insulate themselves from potential competition thereby reducing the contestability of their market and affording themselves an opportunity to earn higher profits.

Bain (1956) suggested that barriers to entry stem from one or more of three sources, and in all industries it is the aggregate of all of the barriers that determines the degree of difficulty of entry into that market rather than the influence of any one single barrier. The three sources are;

- (a) *Product differentiation*
- (b) *Absolute cost advantage*
- (c) *Economies of scale*

(a) Product Differentiation

A product differentiation barrier exists because producers in the marketplace enjoy the goodwill or inertia on the part of the consumers which makes them unwilling to try something different. Such preferences can arise where established firms have exclusive control of superior product design through patent protection or established firms may have established a high level of customer goodwill by supplying a quality product or service. Potential entrants must overcome this inertia by offering a similar product (with similar average cost conditions) at a lower price and hence a lower profit (or a loss), or by spending additional resources on production promotion and advertising in order to conquer existing customer habits. Either of these alternatives involves additional costs and reduced revenues for the potential entrants and it is the extent

of these costs and reduced revenue which creates the barrier behind which existing firms can raise their selling price above the average cost.

(b) Absolute Cost Advantage

An absolute cost barrier to entry relates to the ability of established firms to produce any given level of output at a lower unit cost than potential entrants (Clarke, 1985, p. 74). In this case existing firms may enjoy supernormal profits in relation to their average costs without inducing competitive entry (Howe, 1978, p.61).

Two possible sources of absolute cost advantage exist ;

(1) Superior Production Techniques relative to the potential entrant. These may exist through patents or as a result of experience in dealing in the market. These techniques may manifest themselves in the learning or experience curve, where there is an observed tendency for unit costs to decline as the firm gains more cumulative experience producing the product. Costs decline as workers improve their methods and become more experienced, plant layout improves, specialised equipment may be developed or standard equipment may be customised.

(2) Favourable access to resources (or access to superior resources) relative to the potential entrant. Established firms may have locked up the most favourable sources of raw material at very favourable prices. Additionally the established firms may be better able to attract a superior or cheaper pool of labour or it may have access to same. They may also have a favourable location because of rent charges, proximity to raw materials, transport routes or customers. The established firm may have access to the most favourable distribution channels thus making it more difficult for the potential entrant to get their products to the marketplace. Access to capital or the availability of capital at a cost less than that available to the competitors, and access to a pool of management skills

and expertise constitutes an absolute advantage.

(c) Economies of Scale

Economies of scale arise when long run average costs decline as output expands and occur due to the existence of non-proportional inputs; costs which rise less than proportionately with output. This entry barrier arises because new entrants are unable to secure full advantages of their scale without contributing a significant share of the industry's output. If the firm enters at or above the minimum efficient scale (the lowest point at which full scale economies are achieved) it makes a significant contribution to the industry's output and is likely to cause a substantial drop in market price (possibly to below its unit cost). Alternatively, if it enters at less than the minimum efficient level it will suffer a cost disadvantage. Scale economies are present in every function of a business, including manufacturing, purchasing, research and development, marketing and distribution (Porter, 1980, p.7).

Supplementing the three barriers proposed by Bain (1956) two additional barriers were outlined by Porter (1980):

(d) Capital Requirements

(e) Switching Costs

(d) Capital Requirements

Capital requirements act a barrier to entry if there is a need to invest in 'up front' activities such as plant and equipment or advertising. This places the potential entrant at a cost disadvantage relative to established firms as the latter has already invested in these activities. New entrants may have difficulty in raising funds at a competitive rate (relative to those being charged to established firms) as entry into the market may be viewed as a risky use of the capital reflected in a higher premia being

charged, or the funds may not be available in the desired amounts.

Capital is necessary not only for production facilities but also for extra services now expected from suppliers (see pg. 17) such as customer credit, inventories (both of raw materials and finished goods), staff overheads for indirect functions such as quality and administration.

Bain viewed the principal effect of capital as being to reduce the pool of potential entrants rather than representing a barrier to entry of all prospective entrants (Clarke, 1985, p. 77).

(e) *Switching costs*

Switching costs represent a once off cost incurred by the buyer in switching from an established supplier to the new entrant. The switching cost may include employee retraining, cost of ancillary equipment, cost and time in testing or approving a new source. This barrier corresponds with Stigler's definition. In addition to the actual cost involved the customer faces very real risks involved in switching suppliers. There is a risk that the new supplier will not attain the standard of the other suppliers or of the displaced supplier, the risk that a poor quality product could be supplied or that the product will not be delivered on time, this is especially true if the customers has adopted a just in time delivery philosophy. The higher the standards set by the buyer the greater the risk that a potential supplier will not attain those standards. These risks on their own may be sufficient to insulate the established supplier from the threat of potential competitors and if they are combined with an actual switch cost, they form a very potent barrier to entry. There is also a psychological cost involved in severing established business relationships, especially if these relationships have been long established and successful and are based around specific individuals.

2.2.4 The Role of Price & Entry Deterrent Tactics

The role of price is central to microeconomic theory but the importance attached to it in the overall competitive process cannot be gauged with any certainty. Firms differ in their management expertise, application and effort with regard to their pricing decision. This results in different degrees of importance being attached to pricing and different degrees of sophistication being exhibited in the pricing decision process.

Increasingly price is being viewed as but one, and sometimes a relatively minor, competitive instrument, along with advertising and product differentiation (Hay and Morris, 1980, p. 113). In recent times product quality and after sale service have also become important competitive instrument. Silberston (1970, p. 511-582) has emphasised that it is not always clear what is meant by 'price'. Published or quoted prices may differ from actual transacted prices, special deals or offers, negotiations or secret price reductions all help to ensure that the definition of a market price remains ambiguous.

In microeconomic theory the overall pricing decision for producers in competition with each other or for monopolists is straight forward, it is in the area of oligopoly that this decision becomes ambiguous. Here, in the absence of formal restrictive trading agreements, the interdependence brought about by the number of suppliers produces a mutual respect for each other and each firm's reaction to individual pricing and output decisions is not known with any degree of certainty; there is always a fear for individual producers that their competitors will not follow their price increases but will follow any price reduction. The existence of a kinked demand curve facing individual producers is held to account for two aspects of business pricing behaviour; the tendency for individual oligopolists to hold their selling price constant despite changes in cost or demand conditions and the corresponding tendency for all producers within an oligopoly to change their selling price at the same time and in line with each other (Howe, 1978, p. 65).

The desire of potential entrants to enter a market stems from their belief that they can make an attractive profit from the new market. Therefore, if the established players can manipulate the market price (and accordingly profits) then they can also manipulate entry into that market. If the price is above the maximum entry forestalling price then it will give rise to potential new entrants and to reductions in the established firm's market share and profits in the long run. On the other hand if the price is lower than the maximum entry forestalling price entry will not be forthcoming and current profits and market share will continue in the long run.

While the control of pricing is a very important method of restricting entry into a market the application of it in practice is extremely difficult. Clarke (1985, p. 85-87) outlined four criticisms of such price limiting policies. Firstly, the idea that established firms can co-ordinate their activities to set the limit on price is a major assumption that may not be fully true. Oligopolistic co-ordination is extremely difficult in any market and is contrary to current legislation in virtually all countries. Consequently, markets where entry is ineffectively impeded would be more prevalent than those where it is effectively impeded. Secondly, price limiting theory assumes that established firms want to deter entry absolutely. This may not be the case. Gaskin (1971, p. 306-322) believes that the preference may be to regulate the rate of entry as the market changes over time rather than to deter it totally. Thirdly, the limit price theory is criticised for its assumption that the prospect of negative (or lower than expected profits) is sufficient to deter entry. Bhagwati (1970, p. 297-310) argues that if all firms make losses after entry occurs the new entrant will not necessarily be squeezed out. The new entrant may make smaller losses than the established players and all firms differ in their ability to survive a period of loss making. A new entrant may be prepared to accept a loss in an initial break-in period if it felt that its product would eventually become firmly established. The final criticism is based on the Sylos postulate, an integral part of the limit price theory, which

assumes that when entry occurs the established firms will maintain their current rates of production. Of this Clarke (1985, p.86) says "it (Sylos postulate) is arbitrary. There is no reason why the new entrant should expect the established firm to maintain their pre-entry output levels after entry". Thus the actual response, both its type and intensity, of the established firms cannot be known with certainty.

Accordingly entry into a market can be impeded by influencing the potential entrants expectations towards a more pessimistic outcome of post-entry competition, thereby hoping that they will assume that it is not worth their while entering the market. The crucial question for the potential entrant is the not the pre-entry condition of the market but its post entry condition and the reaction of the established firms to the new entrant. This reaction may take many forms depending on the particular market circumstances. Possible actions include pricing tactics (including predatory pricing), increased advertising, special promotional dealings with customers or distributors. Schelling (1960) suggested that an effective entry deterrent tactic is for the established firm to commit itself to a certain line of action should entry actually take place, for example by carrying excess plant capacity. Such an action demonstrates a commitment to the industry and since the investment in capacity is more or less irreversible it may make the threat of price competition more credible. Spence (1977, p. 534-544) in particular advocated the idea that capacity is an effective deterrent to entry. The notion of using excess capacity as a deterrent to entry can be bolstered if such an investment represents a sunk and non-recoverable cost. Product or brand proliferation is another possible entry deterrent tactic. Such a policy involves established firms packing the market with a variety of products or brands or services so that there is insufficient room for a new firm's products to compete profitably.

2.3 Conduct

Bain (1968, p. 9) defined market conduct as 'the patterns of behaviour that enterprises follow in adapting or adjusting to the markets in which they sell (or buy)'. Market conduct equates to the strategy that a firm chooses to follow. The traditional microeconomic models of the firm portrayed it as having only one objective; profit maximisation subject to cost and revenue constraints. However, the discretion over the firm's objectives afforded to that firm's key individuals and the separation of ownership and control has resulted in a firm having many different objectives, which may or may not include that of profit maximisation.

Every firm that competes in an industry has a competitive strategy, whether explicit or implicit. This strategy may have been developed explicitly through a planning process or it may have evolved implicitly through the activities of the various functional departments. Strategy can be divided into two related but distinct parts (Christensen, 1982, p. 93). Corporate strategy shapes and reveals the organisation's objectives and goals, it produces policies and plans for the attainment of these objectives and it defines the business that the company intends to be in and the kind of organisation (economic and social) it wants to be. Business strategy, which is derived from the corporate strategy, outlines how a company will compete in a given market and how it should position itself vis-a-vis its competitors; it defines the tactics the firm will use against its competitors .

An effective business strategy will seek to take offensive or defensive action in order to create a defensible position against the changing competitive forces in the marketplace while at the same time providing the firm with a competitive advantage over its competitors. By adopting specific strategies and tactics a firm can actually alter the structure of its market in its favour (Spence, 1979, p. 1-9; Salop, 1979, p.335-338).

2.3.1 Generic Strategies

Although the environment that a firm operates in is very broad, encompassing social, political and economic forces, the key aspect of the firm's environment is the industry that it competes in. While this is identical for all firms competing in that industry the strategies developed to compete and to develop a competitive advantage will be different and unique to each competitor. At a very broad level Porter (1980, p. 34-46) outlined three generic strategies for achieving a competitive advantage and a firm must make a choice between these three fundamentally different strategies because the functional requirements and organisational needs of each are significantly different. Firms not following any of these individual strategies will be 'stuck in the middle' and are almost guaranteed low profitability (Porter, 1980, p. 41).

The three generic strategies are;¹

- A *Overall Cost Leadership Strategy*
- B *Differentiation Strategy*
- C *Focused Strategy*

A Overall Cost Leadership Strategy

The theme running through this strategy is to be a low cost producer relative to the competition across the entire product line in the industry. Attaining a position of cost leadership requires a thorough knowledge of the actual costs, a vigorous pursuit of cost reductions, tight overhead control and cost minimisation in all areas and a great deal of managerial attention to control costs. A low cost position is not equivalent to a low price strategy. Low price can be a chosen position in the marketplace, whereas low cost means a firm has the lowest cost of getting a product to the marketplace. Once a low cost position has been achieved the firm can choose to compete at a low price thereby squeezing the competitors or

¹ The discussion on each of these in the pages that follow is drawn from Porter (1980, p. 34-46, 127-155).

it can compete at the 'market price' and earn above average returns .

Having a low cost position yields the firm above average returns irrespective of the presence of strong competitive forces. Such a strategy gives the firm a defensive position against rivalry from competitors because its lower costs means that it can still earn returns after its competitors have competed away their profits through rivalry. It also defends the firm against powerful buyers because buyers can only exert power to drive down prices to the next most efficient producer and the less efficient competitors will suffer first in the face of competitive pressure.

A cost leadership position can be vulnerable if technological change nullifies past investment or learning, and allows industry newcomers or followers to invest in low cost product methods. Equally, the firm focused exclusively on costs may be unable to see required product or marketing changes and may find its market evaporates. To continue its cost leadership position a firm needs to control the costs of its inputs; should these rise (due to exogenous influences) the price differential between the low cost producer and those pursuing a differential strategy may narrow and may not be sufficient to retain the market share.

B Differentiation Strategy

The cornerstone of this strategy is one of differentiating the product so that it is perceived as being a unique and it does not have to compete against substitute products. Differentiation can take many forms such as brand image or perceived differences in technology, customer services and product design, product quality or after sales services.

Differentiation is a viable strategy for earning above average returns because it creates brand loyalty and provides insulation from price competition and substitute products as it effectively limits buyers' power.

A differentiation strategy may be viewed as a short term strategy rather than a longer term one unless the competitive advantage that exists can only be replicated in the long term; competitors will attempt to further distinguish their products so as to eliminate the original product or to make their products as differentiated. The insulation from price competition provided by this strategy cannot be permanent unless the product has an inelastic demand and consumers, especially industrial consumers, will not continually tolerate price increases but will investigate alternative products to satisfy their needs.

Differentiation involves a number of risks. The cost differential between low cost producers and the differentiated firm may become too great for differentiation to hold the brand loyalty; buyers thus sacrifice some of the features, services or images possessed by the differentiated firm for larger savings and imitations may narrow the perceived difference especially if these are available at a lower cost.

C Focused Strategy

The essence of this strategy is that the firm concentrates entirely on one particular sector, buyer group, product line or geographical area. The entire strategy focuses on serving the particular target market very well and all functional areas operate with this in mind. A focused strategy rests on the premise that the firm is best able to serve its narrow target market more effectively than their competitors who are competing more broadly. Within this overall strategy the firm will strive for either an overall cost leadership strategy or a differentiation strategy in order to serve the target market effectively.

A focused strategy can be viewed as a high risk strategy as the failure of the target market (customer, geographical region, etc) would have a serious consequence for the firm as it is totally dependent on its target market. It also faces a challenge from competitors that find sub markets

within the focused market thus outfocusing the focuser.

2.3.2 Dimensions of Generic Strategy

Within the three generic strategies a firm can choose to formulate its strategy along specific dimensions; thus firms who have adopted the same generic strategy could go about implementing this strategy in a variety of ways. The strategic dimensions relevant to this framework are;

- (i) *Specialisation*: the degree to which the firm focuses its efforts in terms of width of its product lines, the target customer segments or the geographical markets served.
- (ii) *Technological position*: the degree to which the firm seeks a position of technical leadership. Here technology refers to both product and process, and it is the latter which is of particular relevance in this framework.
- (iii) *Cost position and price policy*: the extent to which it seeks the low cost position in manufacturing and distribution through investment in cost minimising facilities and equipment. Price policy refers to the firm's relative price position in the market and its pricing philosophy. The firm can choose to be the price leader in the industry or to price discrimination tactics. Price position will usually be related to other variables such as cost position and quality.
- (iv) *Quality position*: the firm's level of product and process quality. The assumption underpinning the importance of quality is that the customer (industrial or consumer) will always choose the most superior product, the one with the highest quality standard, and that a high quality product does not necessarily mean a high price. Quality is referred to as an all embracing concept and goes further than the traditional view of being confined to a quality control department and of being inspected into the product by eliminating the defective products. Quality includes product

quality, the process quality, workmanship standards, the quality of the after sales service and the quality of the service from all business functions not just the manufacturing function. Based on Lancaster's (1966) definition of a product as a bundle of characteristics or attributes desired by the customer, it is ultimately the customer that decides on the level of quality they desire; thus the definition of quality is subjective.

(v) *Vertical integration*: the extent of value added as reflected in the level of forward / backward integration adopted.

2.3.2 The Role of A Sustainable Competitive Advantage

Every firm, through its strategy, seeks to create and maintain a sustainable competitive advantage over its competitor. Such an advantage is one where the strategy is based not on equivalence but on dimensions that set the company apart. It is based not on the improvement of some facet of the firm's business but on improvements relative to its competitors and the advantage is sustainable if it can not be readily copied. A sustainable advantage is one where competitors are slow to notice the change and / or a slow to react to it, thus the time lag until it is copied is long thereby giving the firm an opportunity to exploit the advantage.

In seeking its position of uniqueness there are two fundamental types of competitive advantages that a firm can possess; lower cost and / or product differentiation, and every truly successful strategy that outperforms competitors exploits one or both of these sources of competitive advantage (Christensen, 1982, p. 100).

CHAPTER 3

The Print (and Publishing) Industry

Having described an appropriate framework for examining the software manual printing sector in chapter 2, we turn in chapter 4 to an application of that framework to that industry. In this chapter we describe the main features of the broader industrial context within which or out of which the software manual printing industry has emerged.

The print and publishing sector (NACE 473/474) covers every variety of printed goods, from newspapers and calendars to books and cheques. The main sectors of the Irish printing industry are newspaper printing which accounts for 33.3% of the industry's turnover and general printing which accounts for over 30% of the work. The 'general printing' sector is an all embracing sector covering a multitude of printed matter that is not conveniently covered by any other category within the NACE classification. Almost 90% of the industry's exports go to Europe with the UK being the main trading partner, accounting for 53% of exports. The UK represents 77% of print imports.

The demand for printed products is a derived demand, being derived from the activities in other economic areas. For example, the demand for school books is derived from the school going population and is influenced by the developments in the educational curriculum and in the second hand school book market. The print industry is unique insofar as it is not responsible for selling the item it produces, rather it is only concerned with selling its machine hours and associated expertise; it is the print publisher responsibility to ensure that the printed items are sold. The understanding of this is critical to the understanding of the print industry as a whole. As a consequence of selling its machine time the critical factor for the print industry is to maximise the number of saleable machine hours that are available and to maximise the revenue (and

minimise the costs) for each of these hours. Anything that prevents this is an obstacle to increased profitability in the industry. The installed equipment restricts or limits the type of print work that a supplier can produce thus limiting its customer base, forcing the individual print suppliers to concentrate within specific sub sections of this overall NACE classification (and within specific sectors of the general printing sector).

The print and publishing industry makes a significant contribution to the national economy, being valued at £502m (gross output) and £311 million per annum (net output). It is largest single employer in any three digit NACE classification employing 11,053 people, which represents 5.8% of the total manufacturing workforce and it accounts for 3.6% of the net output of all manufacturing firms (CSO, 1992).

The structure of the printing industry worldwide is characterised by the multiplicity of small scale establishments and Ireland is no exception to this (Table 3.1). Many of these firms have been set up as offshoots of larger firms by entrepreneurial craftsman once they have qualified and there is an increasing trend towards further fragmentation into smaller business establishment (establishments with less than 50 employees) (Table 3.2). This fragmentation is a problem for the industry as it contributes to the instability of its financial performance.

Geographically the printing industry is heavily concentrated in the Dublin region, which accounts for 72% of the industry's employment (Table 3.3).

Breakdown of Print Establishments by Size		
Firm size by number of full time employees	Ireland %	UK %
0-9	41	80
10-19	24	9
20-49	23	6
50-99	7	3
100+	5	3

Table 3.1 Source CSO, 1993

From 1981 to 1985 employment levels in this industry declined by 14.2% (from 11522 to 9876) (Table 3.4). This decline was less than the decline in the overall manufacturing employment over the same period (18.3%), thus the rate of job losses in the printing industry appears to be less than that in the manufacturing sector in general (NACE 1 to 4, less NACE 11,12,16,17,21 and 23). Since 1985 employment in this sector has increased by 1121 (11.3%) .

Firms Size 1987-1989			
Number of full time employees	Number of Firms		
	1989	1988	1987
0-10	150	163	158
11-49	171	157	148
50-99	28	28	27
100 +	19	16	13
Total	368	364	349

Table 3.2 Source CSO, 1993

Employment Breakdown by Region

Region	%
Dublin	73
Midlands	2
Midwest	4
West	2
North	4
North West	1
South	7
South West	6

Table 3.3

Source CSO, 1993

**Employment Level
1980-1989**

Year	No. Employed
1980	11436
1981	11522
1982	10793
1983	10619
1984	9958
1985	9876
1986	9932
1987	10242
1988	10840
1989	11050

Table 3.4

Source CSO, 1993

Employment levels in this sector are strongly influenced by the trade unions in the form of strict manning levels and rigid demarcation lines. Such is the power of these unions that the manning levels have not declined significantly with the advent of improved technology,

mechanisation, and computerisation. In the three years 1987-89 this sector has invested £85m in plant and equipment however the wages and salaries cost as a percentage of gross output has only declined from 33% to 32%. Present manning levels and hourly wage rates in the industry are unrealistically high and they reflect the bygone age when print was a craft rather than a commodity. These problems of over manning and restrictive practices were noted by the policy submission made by the Federation of Print Paper and Board Industries (FPPBI, 1992). This submission noted that the manning levels and demarcation lines have lead to uncompetitive work practices and in a survey by the FPPBI of print executives there was a general view that the operation of work practices and demarcation rules were significant barriers to change within the industry while the overall role of the unions was considered to be obstructive.

The net output per employee (where net output represents the value added to industrial input) in the print industry compares very poorly to overall manufacturing. The employees in the print industry have a lower output per employee while simultaneously enjoying a higher wages per employee figure. Over the period 1980 to 1989, the differential in net output per employee has increased from 20% to 59% in favour of the manufacturing employee while while the wage and salaries cost per employee were, on average, 14% higher in favour of the print employee (Table 3.5). This poor performance may be attributed, among other factors, to over manning, higher wage cost and inefficiencies due to demarcation.

When broken down by the size of the establishment a clear trend emerges that the larger the establishment (in terms of employees) the more inefficient it is in comparison to a similarly sized manufacturing establishment, based on net output and wages per employee. Print establishments with 10 or less employees have 8.6% less net output per employee while wage cost per employee are 1.7% higher than a

comparable manufacturing operation. At the other end of the spectrum, print establishments with 50 employees or more are producing 25% less net output per employee and have 16% higher wages cost per employee than a comparable manufacturing operation (CSO, 1993). These figures give credence to the notion that the larger the establishment the more manning levels and demarcation adversely affect its performance.

By comparison to the UK print and publishing industry the indigenous industry performs very poorly (Table 3.6). Domestic wage costs per employee are higher than in the UK while net output per employee is lower. The FPPBI publication (1992) cited that domestic wage costs per employee are 32% higher than those in the UK while net output per employee is 34% lower than in the UK. The 1988 Labour Cost Survey supports the arguments that indigenous wage costs are higher than those in the UK, although it illustrates a significantly lower differential (Table 3.7). Irrespective of what the correct wage differential is the main point is that the wage costs within the print sector are higher than in the UK.

The UK printing industry has acknowledged that its productivity levels remain unfavourable versus Japan and the Far East and that its hourly wage rates remain unrealistically high (HMSO, 1992,). To achieve higher rates of return productivity improvements need to be implemented either demanning and increased automation with the objective of increasing the contribution per machine hour of print produced. Given that the print industry is selling its machine time a critical factor for it to maximise its revenue will be the minimisation of machine downtime due to make-ready and job-changes/times and minimising both direct and indirect labour costs.

The uncompetitiveness of this sector was noted in the McIver report (1977) on the industry which stated that the future competitiveness would be severely constrained unless the levels of productivity could be improved significantly. According to this report the the level of poor

productivity was attributable to two factors ;

- (a) The retention of surplus labour
- (b) Slower improvement in work practices

The McIver report also noted that slower improvements in technology contributed to the lower level of productivity. While recent figures would indicate that this sector has advanced along the technological road these improvements have not been matched by improvements in the overall productivity levels because of the manning levels and rigid demarcation lines. One of the tangible signs of these inefficiencies is the high and increasing levels of book imports with an increasing number of Irish book publishers printing their books abroad. Gill & Macmillan claim that foreign prices can be up to 20% lower than those quoted by indigenous suppliers and even with the transport costs it is more cost effective for them to import their books (internal source).

Comparison between the Print Industry and Manufacturing*						
	Net Output per Employee			Wages per Employee		
	Print £	Manuf £	% Difference	Print £	Manuf £	% Difference
1981	12500	15000	20	7203	6188	14
1982	14700	17800	21	8468	7073	19
1983	15000	22000	46	9068	8013	11
1984	18000	26000	44	10383	8927	14
1985	20700	29000	41	11077	9773	12
1986	22500	31000	37	12041	10393	14
1987	24100	35000	45	12849	11072	14
1988	25900	40000	54	13413	11638	13
1989	28200	45000	59	14466	12152	16
* Manufacturing represents NACE 1 to 4, less NACE 11,12,16,17,21 and 23.						
Table 3.5				Source CSO, 1993		

Comparison between the UK and Irish Print Industry

	Wage Cost Per Employee		Net Output Per Employee	
	Ireland	UK	Ireland	UK
	£	£	£	£
1988	12500	8500	25900	34500

*UK figures converted at an exchange rate of £0.90

Table 3.6

Source; FPBBI 1992

**Wage Cost Comparison between Ireland and UK
(NACE 473/4)**

	Ireland	UK
Hourly Wage Costs	13.29	13.23
Monthly Wage Costs	2056	2044

Based in ECU

Table 3.7

Source; 1988 Labour Cost Survey

CHAPTER 4

The Software Manual Printing Sector

4.1 Introduction

The demand in the software manual printing sector is a derived demand, being derived and dependent on the activities in the software publishing sector. The software publishing sector is composed of the software producing (publishing) firms that 'generate at least 50% of their revenues from personal software development or publishing' ('Softletter' publication definition). This definition precludes firms that write software for specific installations or specific computers (mainframes or minis). As the core business of these publishers is the development and publishing of software in a wider sense they can be viewed as developing and selling technology.

Over the last 5 years the software publishing sector has experienced phenomenal growth with an average annual growth rate of 34% for the period 1987-1991. In 1991 the top 100 software publishers had total worldwide revenues of \$7.557 billion which represented an increase of 32% on the 1990 figure, which in turn was 34% higher than the 1989 level (Softletter report 1992).

The software publishing sector is a very concentrated industrial sector, the one firm concentration ratio (based on sales revenues) is 30%, while the top three software publishers account for 50% of the industry's revenue, and the top 12 publishers account for 79% of the revenue. These figures reflect an increase on the previous year illustrating that the market is becoming more concentrated (Table 4.1). The salient feature of the concentration level is the one firm concentration level; the dominance of Microsoft. In 1991 Microsoft's worldwide revenues were \$2.275 billion which equated to 30% of the industry's revenues, this percentage has

increased from 25% in 1990 and 22.5% in 1989. Microsoft's revenue growth has surpassed any of its rivals with its 1991 revenue growth being 57% (as compared to average of 21% growth for the next five largest publishers) (Table 4.2). Microsoft's dominance is so great that the combined revenues of the next three largest software publishers (Lotus, Novell and Wordperfect) do not surpass its revenues (\$ 2.275b v \$2.000b).

Concentration Ratios* in the Software Publishing Sector					
	cr 1	cr 2	cr 3	cr 6	cr 12
1990	25	37	46	62	76
1991	30	41	50	67	79
* Based on sales revenue					
Table 4.1			Source: Softletter 1992,1991		

The software industry has become a global industry with an increasing proportion of total worldwide sales revenue being generated from markets outside of the USA, international sales. In 1991 the top 100 software publishers generated 45% of their total worldwide revenues from such international sales as compared to 37% in 1990 and this trend is expected to continue. Furthermore in 1991 international sales increased at a rate of 34% as compared to a rate of 24% for domestic USA sales, this was the first occasion that sales outside of the USA exceeded domestic USA sales. Reflecting the importance attached to international sales and revenues a number of the software publishers undertook the strategic decision to set up a 'manufacturing' base outside of the USA, which would be dedicated to supporting these international markets. The attractiveness of Ireland as a 'manufacturing' site for these software publishers is reflected by the fact that the IDA succeeded in attracting many of the top ranked PC software publishers to Ireland, including the top two publishers ; Microsoft and Lotus (Table 4.3).

Growth Rates of the Top 10 Software Publishers		
	%	%
	Growth	Growth
	1989-90	1990-1991
Microsoft	52	54
Lotus	23	21
Novell	19	29
WordPerfect	56	18
Borland	83	19
Autodesk	34	20
Adobe	39	36
Symantec	117	53
Aldus	37	24
SPC	39	0
Table 4.2	Source; Softletter April 1992	

Software Publishers based in Ireland			
	Ranking	Worldwide Revenues (\$m)	% of revenue from International sales
Microsoft	1	\$2275	56
Lotus	2	\$ 828	51
Borland	5	\$ 499	50
Symantec	8	\$ 188	39
Quarterdeck	18	\$ 49	16
Wordstar	25	\$ 38	61
Claris	na	na	na
Table 4.3	Source; Softletter April 1992		

The software development and 'manufacturing' process can be divided into two distinct halves. The first is the actual development of the software and the relevant documentation and the subsequent translation

of these into foreign languages. The second is that of mass producing the software packages and the distribution of these to the various markets throughout the world. The core business of the software publishers is software development and the marketing of this software hence their actual 'manufacturing' process is not viewed as a core business activity but as a 'necessary evil'. In the United States, up to very recently, many of the major software publishers contracted out their 'manufacturing' operations to third parties that specialise in such activities, such as Disk Copy Labs and even today some software publishers still subcontract out this work (eg) Symantec and Borland. In Europe, the approach has been very similar with subcontractors such as MacByte, Softrans and Iona Software taking on the added responsibility of translating the software and manuals into local languages and producing and distributing the finished packages. Apart from those publishers that have set up in Ireland many smaller software publishers both in the US and Europe still adopt this approach of concentrating on their core business of software development and outsourcing all other activities.

The research and development activities (of developing and upgrading the software) are exclusively carried out in the US due to the enormous research and development costs involved (Microsoft is currently investing us\$1m a day in research, development and design activities) and the availability of the necessary skills, mainly software developers. The translation of the English language software and manuals into the European languages is controlled by the Irish subsidiary. The end result of the software development cycle (including translation), irrespective of where it occurs, is a set of software master diskettes for each product and a set of printing films for each manual in that package. These are then passed on to the 'manufacturing' arm of the publishers.

The 'manufacturing' operation consists of duplicating the set of software master diskettes onto blank diskettes on a mass scale to produce individual sets of diskettes. These diskettes are then combined with a set

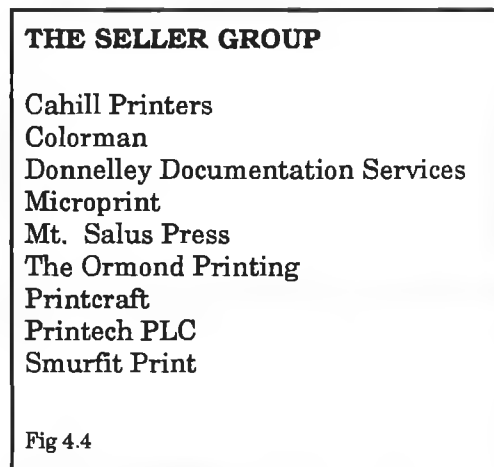
of manuals, produced from the set of printing films by a print supplier, and any other documentation that may be required, such as a licence agreement and a customer registration card and are placed into a retail box to become a software package. It is a misnomer to describe the production activity of the publishers as 'manufacturing' process; they are not involved in converting raw materials from one form to another, their process is an assembly activity where they assembly together all the various components to produce a package. Only the disk duplication process can be regarded as 'manufacturing' process and to avail of the IDA's grant aided package the publishers must at a minimum perform this activity in their facility.

The arrival of the software publishers to Ireland and the growth in their business was a timely and much needed boost for the domestic printing industry. The revenues generated by these publishers resulted in a huge absolute and increasing demand for software manuals. Software manuals are the printed manuals that are included in every software package. These manuals exist in many sizes (height and length), styles (perfect bound, wire-o bound or saddle stitched) and they may be printed in many colours on the text and cover. The size, style and colours will be consistent for all manuals produced for individual software publishers in keeping within their corporate image and their desire for product standardisation. By having a corporate image / standard the software publishers are assured that all of their software products and component pieces will look identical irrespective of the product, language or country of sale. Across the range of software publishers their manuals are broadly similar, in size, layout, colour and finish giving rise to the idea of a standard software manual within the industry.

The purpose of the software manual is twofold. Firstly to act as an instructional guide for the user, to educate and assist the user in obtaining the maximum benefit from the software and, secondly to act as a reference for all future queries and questions relating to the software.

Generically these purpose can be classified as the storage of information on paper. Returning to Lancaster's (1966) definition of a product as being a bundle of desired characteristics, the characteristic required of the manual is that it must contain the necessary information in a medium that is accessible and usable by the customer. However this requirement is a product requirement rather than a specific manual requirement; it is necessary for the software package to have this characteristic and to date it possess this characteristic in the medium of the software manual.

The production of software manuals is not an activity that the software publishers perform themselves, rather they subcontract it out to the print suppliers outlined in figure 4.4.



The compound growth rate for this printing sector is 30% (1987 to 1992) (Table 4.5) and the actual value of the market has increased from £4m to £58m, making it one of the largest sectors within the overall printing classification (NACE 472/473).

As a dependent sector the demand for software manuals is influenced by development and activities within the software publishing sector particularly the concentration level. Table 4.6 illustrates the breakdown of the demand for manuals by software publishers.

Market Value of the Software Manual Printing Sector								
Year	1984	1987	1988	1989	1990	1991	1992	1993
Market Value £m	4.0	12.0	22.8	36.0	45.5	53.0	58.0	63.5*
*1993 is a projected figures								
Table 4.4 Source; Internal								

The most striking feature of the demand side is the dominance of Microsoft and this dominance is not surprising since it has a similar domination in the software publishing market. The one firm concentration ratio is 41%, while the two firm ratio is 68 %, thus 68% of the industry's output is accounted for by two firms, leaving the remainder (32%) for all the other publishers.

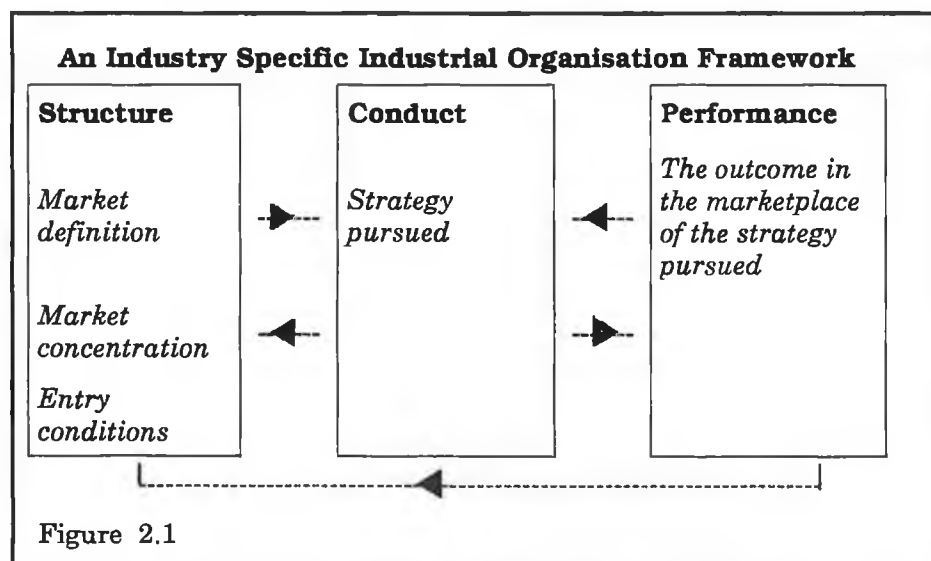
Breakdown of Demand for Manuals by Software Publishers							
£ million	1987	1988	1989	1990	1991	1992	1993
Microsoft	8.0	12.5	16.0	19.5	23.0	27.0	30.0
Lotus	3.5	7.5	8.5	12.0	14.0	15.0	16.0
Borland	0	2.0	8.0	8.0	7.0	7.0	7.0
Claris	0	0	2.0	3.0	3.5	3.5	4.0
Symantec	0	0	0	1.0	3.0	3.5	4.0
Quarterdeck	0	0	.5	.75	1.0	1.0	1.0
Wordstar	0	.8	1.0	1.2	1.5	1.5	1.5
Total	12.0	22.8	36	45.5	53.0	58.0	63.5
All figure are in £M							
Table 4.5 Source Internal							

Together the buyer and seller groups form a distinct cluster. The buyer group has restricted its manual printing business to those suppliers listed in figure 4.4, and these suppliers have almost exclusively dedicated themselves to supplying the software publishers. At the fundamental

level the linkage between the two groups is purely a commercial one, payment in return for the use of machine time and expertise. However the exclusivity between these two groups results in this cluster being of strategic significance to the two parties and the current value of business in this cluster results in it being of significance for the entire printing industry. Up to know the existence of this has been a positive benefit to the sellers (individually and collectively), and to the printing industry as a whole, however the dependency that now exists on one small group of customers could transform these benefits into negatives if the demand for software manuals was to reduce significantly.

4.2 Market Structure

The software manual sector will be examined based on the framework outlined in chapter 2.



4.2.1 Market Definition

While in virtually all markets it is very difficult to draw a line around a group of products and refer to them as a market, in the software manual printing sector it is relatively easy, as all of the major suppliers have

defined themselves as software manual suppliers or suppliers to the software industry. In addition to defining their mission statement these suppliers have dedicated themselves almost exclusively to supplying software manuals and have dedicated their production process and organisation structure to suit. Table 4.7 illustrates the proportion of each firm's sales revenue accounted for by software manuals.

Percentage of Total Sales Revenue from Software Manual Sales	
Print Supplier	% of revenue
Cahills	80
Colorman	100
Microprint	70
Ormond	90
Printech	100
Mt. Salus	90
DDS	90
Smurfit Print	100
Printcraft	100
Table 4.6	Source; Internal

This software manual printing sector differs fundamentally from other printing sectors having its unique and distinguishing characteristics, the main ones being;

- (a) *Nature of the print work and production process*
- (b) *Software manuals as an input to another industry*
- (c) *The role of quality*
- (d) *Firm size*
- (e) *Non traded sector*

(a) Nature of the print work and production process

The primary objective of all print suppliers is to maximise the output and revenue from each of their machine hours. Manuals produced for one individual software publishers will be identical in appearances and size, in keeping with that publisher's corporate image and its desire for product standardisation, and across all of the publishers the manuals are virtually identical in size, finish and number of colours. This predictable consistency of work is in direct contrast to the commercial or general printing sector where the work varies considerably from job to job. This consistency has allowed the software manual print suppliers to maximise the number of saleable machine hours by minimising machine downtime; the more similar the work the less need there is to reconfigure a machine to cope with a new page size or extra colours hence the more time that is available for productive purposes.

The printing industry (with the exception of newspaper printing) is generally regarded as a 'jobbing industry' that is the 'making of goods to specific customer requirements and each item is usually produced as a 'once off' which may never be repeated' (McCarthy, 1979, p. 293). However, the production of software manuals is a 'batch production' process, with the main characteristic being the highly repetitive nature of the work. This transformation, from once-off to batch production, has involved changes in organisational structures and the introduction of new departments such as production control, quality control, scheduling, order entry and costing departments, dedicated to serving the manufacturing process. While many of these departments/functions are present in manufacturing plants in other industry's, they were, up to very recently, largely absent in the printing industry. The introduction of these new function areas has forced these print suppliers into acquiring new skill sets and competences.

The repetitive nature of the work in this sector originates from the

software publisher's 'manufacturing' process. This process is a mixed model batch production process; they produce batches of different software products during each daily production cycle. The software 'manufacturing' process does not incur significant set up costs hence there is no minimum economic production quantity and there is no cost penalty in producing small batches on a frequent basis. The procurement policies of the software publishers are derived from these production policies, and they centre on printing batches of manuals to match their production demands, subject to any economic order quantity. Such policies emphasise the need to print small batches of manuals on a regular basis. By purchasing in small lot sizes the software publishers also benefit from a reduction in their scrap costs, should the manuals be superseded by a newer version or should the content of the manual have to change due to a change in the software.

The economic order quantity for the manuals is driven by the high set up costs and set up time for each piece of print equipment, and currently there are two factors influencing these times and costs. Firstly, the actual design of the machinery does not lend itself zero set up time or rapid change over between print jobs. The machinery was designed for sectors where the running time would far exceed the change over time and consequently the actual set up time would not be viewed as a problem. If the modus operandi of the software publishers was similar to other print publishers, printing large volumes infrequently, then the actual set up time would not be a significant issue or a constraining factor. The second factor influencing current set up times and costs is that the actual machine set up practices are controlled by the trade unions via their demarcation lines, manning levels and work practices. Rather than seek to overcome the design limitations of the machinery these practices actually contribute significantly to the problem.

A contributory factor to the repetitive nature of the printing process is that when a print supplier is awarded a particular set of printing films

that set remains with that supplier for the life of that product. The cost of switching the film (from one supplier to another) and incurring extra origination (platemaking) charges is an obstacle prohibiting the switching of products between suppliers. However the major factor limiting the switching of print jobs is the risks that a new supplier will not perform to the same standard as the displaced supplier. As a result of this loyalty when a reprint of a manual is required it will usually be the same supplier that reprints it.

This approach of printing small batches regularly and using the same suppliers is at variance with the way most print publishers operate; they print sufficiently large quantities so that the title may never have to be reprinted and if the title needs to be reprinted they seek quotations on it. This method of operation results in the software publishers placing repeat orders worth £5.0m per month which represents 90% of the business in this sector. This turnover is guaranteed to the suppliers by virtue of the fact that they have the particular set of printing films. The remainder of the business in this sector is derived from new products which the software publishers are constantly releasing. This new business is automatically divided amongst the publishers' existing suppliers because of their proven track record and the publishers' preference to increase their trading relationship with these existing, tried and trusted suppliers rather than commence trading with new suppliers. By virtue of being a proven supplier to a publisher the supplier automatically benefits from both repeat work and new business.

In the commercial and book printing sectors the printing job usually consists of one title only; however because a software package may contain more than one manual the print supplier is required to print, assemble and deliver all of the manuals in that package. Transactions between the software publishers and their print suppliers are done in units of these manual sets (through a unique part number). The existence of these sets places increased workload and management requirements on

the manual suppliers because they have to print and finish all of the manuals in a set before they can deliver any manuals to their customers; one manual on its own from the set is of no use to the software publishers.

(b) Software manuals as an input to another industry

The output of the software manual printing sector is an input into the software production process. This is one of the few instances where the output of any printing sector is the input into another sector, generally its output is the finished article itself and is resold without any further processing e.g. newspapers and book printing. As an input into the software 'manufacturing' process these print suppliers have to contend with specific demands from their customers which originate from this process. While the individual publishers have their own unique requirements, across the industry there are two generic requirements that deserve special attention; guaranteed 'on time' delivery of the manuals and the provision of additional value added services.

The software publishers can only operate a successful 'manufacturing' operation if their raw materials are delivered on time every time. Because the manuals are an integral part of their process the print suppliers are expected to consistently deliver them 'on time'. While the definition of 'on time' varies from publishers to publishers the basic concept does not, the delivery should be made when it is requested, not before and not later. Some publishers may request delivery on a specific day others have further refined it by requesting delivery at a particular time of that day (especially if they are a Just In Time (JIT) company). Failure to deliver all of the required delivery on the appointed day or time means a late delivery and a possible disruption to the publisher's production schedule. Late deliveries may result in some form of punitive action by the publisher. The requirement for 'on time' delivery is next only to the quality requirement as a key factor for success (survival) in this sector. Allied Irish Securities (1989) in their report on the industry concluded

that the concept of 'on time' delivery is a major difficulty facing the industry especially given the tight deadlines set by the publishers and the industry's historical reputation. The Rostrum report (1984 p. 47) agreed that the print industry had a poor reputation for meeting committed delivery dates. The demand for on time delivery is compounded by the volumes of repeat work, the vast number of titles being processed and the short leadtimes (time taken from the date the order is placed to its delivery).

In the commercial book printing environment the suppliers know well in advance of a print job being required, leadtimes are quoted in weeks and seldom are jobs rescheduled. However in the software manual sector leadtimes are quoted in days and rescheduling of titles is common place as the software publishers frequently reschedule their production to accommodate a new urgent order. Ironically the more successful a supplier is the more of a difficulty 'on time' delivery poses; the fewer titles that an individual suppliers has the greater the chance that they can deliver them 'on time'. The attainment of 'on time' delivery has not been achieved without great expense particularly in the areas of production control systems and the managerial skills required, neither of which previously existed in the industry in any great abundance. As more of the software publishers move along the JIT road the deadlines will become more rigid which in turn will impact the suppliers more severely.

As suppliers to another industry the software manuals suppliers have to adhere to all the requirements of their customers. In the software manual sector these requirements are many and while they vary from publisher to publisher they are a number of generic requirements that apply across all software publishers. Two requirements deserve special attention. Firstly, the holding of printed manuals in inventory on behalf of their customers, without charging the software publishers for the storage or handling of same is the primary requirement in this sector. The need to hold finished goods in inventory stems from the existence of

economic order print quantities. These order quantities 'force' the software publishers to purchase larger quantities of manuals than they actually require for their immediate production cycle. The balance (between the required quantity and the purchase quantity) must be stored by the print supplier until it is required. The amount of finished goods inventory that a supplier would be holding at any one time is a function of the value of business transacted between the supplier and the software publisher; the more successful a supplier is the more inventory they will have to hold unless they have reduced their set up times below the industry norm thereby enabling them to print the exact quantity required by the publisher. This requirement is in sharp contrast to all other printing sectors where the product is printed, delivered and invoiced as one batch. The second significant requirement is the assembling of the individual manuals that belong to a particular software package into a single kit so that the publisher receives a kit or set of manuals rather than the individual manuals separately. This kitting operation is very labour intensive and costly, and for most suppliers this activity is the limiting factor on their capacity. To cope with this requirement and to minimise the constraint on their capacity, many of the suppliers have invested heavily in both labour and capital equipment. Similar to the holding of inventory the cost of assembling the manuals into kits is not passed onto the software publishers but must be borne by the print suppliers.

These extra requirements are new to the printing industry and are unique to this sector. The extra services were not sought after by any of the suppliers but were forced upon them by their software publishing customers as they engaged in 'systemic rationalisation' (Semlinger, 1991), delegating all of their non-essential and non-value added activities to their suppliers while they concentrated on their core business of software duplication. By divesting themselves of these activities, and not incurring any incremental charge for their provision by the suppliers, the publishers have benefited in cost terms and in the simplification of their

'manufacturing' process. The task of forcing of these activities onto the print suppliers was made easier by the adoption of these activities by the industry pioneer (Printech) who subsequently developed them into a competitive advantage and eventually made these requirements industry standards. The adherence to and adoption of these requirements has required the suppliers to invest in additional manpower and equipment (for non-core activities) and to achieve a competence level in these activities; this has not been achieved inexpensively as they are funded out of profits since the software publishers will not accept any incremental charges. The ability of the print suppliers to perform these extra tasks is vital if they wish to be viewed as a major supplier to the industry and as more additional requirements are being placed on the suppliers by the publishers they have to continually adopt and perfect them and accept them as a cost of trading with the software publishers.

(c) The role of Quality

In the framework outlined in chapter 2, the role of quality was discussed as a dimension of a generic strategy. However, in the software manual printing sector the role of quality is twofold. Firstly it is relevant as a dimension of strategy, and secondly it has a vital role in defining the market definition of this sector thereby differentiating this sector from other printing sectors. In this section quality is discussed as a means of defining market structure.

Notwithstanding that quality is of great importance in all industries and that over the latter part of the 1980s the term 'quality' has become a management buzz word, the quality requirements of the software manual printing industry deserves special attention .

The software manuals are an integral part of the software package; they are expected to be technically correct and free from any defect. The software publishers require their product to be viewed by their customers

as being of top quality and defect free like the software provided. The emphasis they place on a quality product can never be overstated and the standards set by them are very rigorous and exacting and are well above any standards encountered by the printing industry heretofore.

The definition, by the software publishers, of a quality product, is an absolute definition; either the manual is defect free or it is not. This approach does not accept the 'normal' printing defects such as smudges, spots, blank pages or missing pages, which were (are) an integral part of other printing sectors. The printing process is not an exact or precise process; it centres around a chemical reaction between ink and water and involves many variables which by their nature may be different from day to day. These variables include the paper, the ink, the hardness (softness) of the water and the quality of the printing plate, and a slight change in any one of these may cause a 'normal' printing defect.

Compounding these variables is the vast volume of paper printed daily by each printing supplier. An average printing press is capable of outputting 200,000 printed sheets per day and each sheet may contain up to 15 pages of a manual. The quality standards that were in existence prior to the arrival of the software publishers (and are currently in existence in other printing sectors) took into account the volume of print produced and the variable nature of the process, and any defects were viewed as a percentage of the total volume printed. Providing the total number of rejects did not exceed the maximum percentage permissible the job was deemed good and was accepted. The arrival of the software publishers in this sector changed this relative requirement to an absolute demand and it is testimony to the power of the software publishers that they were able to change these quality standards so dramatically in a very short time period.

Across the range of software publishers the quality standards are virtually identical and not only are these standard very rigid and thorough, they are 'policed' by the professional quality assurance

departments in each publishers. This is a unique feature of this sector as very few print publishers have such departments or have any means of creating and enforcing quality standards.

The 'policing' of the quality standards involves two dimensions. Firstly, the software publishers will not award their business to just any print supplier. Before a business relationship is started they will audit the potential supplier to evaluate their quality system and their attitude to quality. The basis for this audit is that without an effective system the supplier will be unable to produce manuals to the necessary standards, hence it is pointless commencing a trading relationship with them. The presence of an acceptable quality management system offers the software publishers the assurance that the printing company takes the concept of quality very seriously, and that providing all of their procedures and systems are adhered to a quality product should be produced. While the possession of an independently recognised Quality Management award (such as the Q mark or ISO 9000 registration) is not a prerequisite to trading with a software publisher nor does it exempt them from being audited, it is no coincidence that all of the software manual print suppliers have at least one of the independently recognised Quality Management awards, while the majority of them have the two independent awards. The pressure to receive quality certification arose not from the print suppliers overwhelming affinity with the quality concept but because the possession of such an award was used by the pioneer (Printech) in this sector as a competitive advantage, thus market forces forced the other suppliers to attain the same standard. Quality auditing by the software publisher is not a once off activity; once a supplier has been certified and a business relationship commences they will still be audited on a regular and random basis.

The second dimension of 'policing' the quality standards is by inspecting the supplier's deliveries. Once the audit has been passed the challenge facing the print supplier is to prove that their quality system is effective

and that they can produce the manuals to the standard required. The ultimate aim of all suppliers is to be awarded 'ship to stock' status by their software publishing customers. Ship to stock status is granted when the publisher has sufficient confidence in the supplier's systems and in their proven record to produce a quality product which they will only inspect their manual on a very random basis, and as such all deliveries can go straight to the publisher's stockroom or to their production line. Ship to stock status is not easy to obtain but is easy to lose, and every time the print supplier makes a delivery they are placing their reputation and status 'on the line'. If the quality of the product deteriorates on an ongoing basis then the award will be revoked. Having suppliers that are ship to stock is very important to the software publishers as it eliminates the requirement and cost of having to inspect all incoming deliveries. The software publishers view incoming quality inspection as a non-value added activity and as an activity which correctly belongs with their suppliers since they are contracted to produce a quality product.

The consequences of not attaining ship to stock status or of losing this status are enormous; without ship to stock status they will not become a major supplier to any member of the buyer group. Such is the criticality of ship to stock status that all of the print suppliers have invested heavily in their Quality Control / Assurance Department. This investment includes establishing and maintaining a quality management system, recruiting the necessary personnel to eliminate the defective product before it reaches the publishers, investing in additional machinery that will improve the actual production process thereby reducing the frequency of these defects and retraining staff to make them more aware of the importance of producing a quality product. This magnitude of investment in a non-core activity is new to the individual print suppliers and is also new to the printing industry as a whole and the current quality status has not been attained without considerable expense.

(d) Firm size

The printing industry overall is characterised by a multiplicity of small establishments however the software manual printing sector has attracted to it many of the larger printing establishments (Table 4.7). The suppliers in this sector are viewed as being among the larger (in size and turnover) and more profitable print suppliers in the printing industry and the presence of so many of the larger establishments has as much to do with the requirements of the software publishers as the attractiveness of this sector.

A firm's choice of suppliers is an important strategic decision, firms should strive to deal with suppliers that will positively influence their business and who possess the least power to influence them negatively. It is the function of the professional purchasing departments in the software publishers to select and manage the vendors that have a positive influence on the publisher. The characteristics of the business relationships that exists between publisher and supplier are intercompany co-operation and the concentration of the publisher's demand within specific relationships.

The volume of the demand for manuals generated by the individual publishers and the frequency with which they reprint restricts the publisher's choice of supplier to those larger print firms who can absorb this demand as a percentage of their turnover without running into operational difficulties. The publishers' decision to concentrate their requirements with the least number of suppliers further intensifies the need for the supplier to be able to cope with a significant, and growing, demand for manuals.

The number and type of demands made of the suppliers and the high standards expected also limits their options to those suppliers who have the financial resources, human resources and capabilities of attaining

these standards.

Suppliers' Size by Sales Revenue and Employees		
Supplier	No of Employees	Turnover (Sales Revenue £m)
Cahills	180	8.0
Colorman	120*	7.0*
DDS	350	18.0
Microprint	70	5.6
Mt. Salus	120	9.0
Ormond	90*	7.5*
Printcraft	70	5.0
Printech	324	23
Table 4.7		* = estimate
Source; Business & Finance Jan 30th 1992		

(e) Non traded sector

The existence of the unique requirements (especially JIT deliveries and the quality requirements) has transformed the software manual printing sector into a non-traded sector; a sector that is characterised by a low level of imports / exports and where the price of the commodity is determined within that sector's market domestically. These requirements have ensured that foreign competitors cannot compete on the same footing as their indigenous counterparts. This status is contrary to that which prevails in the general book printing market where import penetration is on the increase.

The absence of foreign competition is a new feature for this sector. In the early days of the sector (1987-1989) a number of Europe's larger print suppliers (Wm. Collins (Scotland) and Brephols (Belgium)) were major suppliers to a number of publishers. It is testimony to the importance

and significance attached to the non-price criteria by the software publishers that they have excluded all foreign competition even though they are more cost competitive than the indigenous print suppliers.

4.2.2 Market Concentration

Market concentration refers to the degree to which production or market share for or within an industry is concentrated in the hands of a few large firms. The breakdown of the market share by the major suppliers is illustrated in Table 4.8.

The distinguishing feature of the supply side is that it is composed of many equally balanced suppliers as illustrated by Table 4.9, which shows the industry's concentration ratios (based on market share). As concentration ratios are only statistical artifacts it is more important to review the reasons behind them rather than the ratios themselves. In the software manual sector the concentration level is attributable to two factors; first movers advantage and the customer base.

(i) First mover advantage

When the first software publishers set up in Ireland in the late 1980s few individuals (including the IDA) foresaw that they would exert a significant demand for print. Fewer still foresaw the linkages that could be forged with these publishers but an exception to this was Printech PLC (formerly Confidential Report Printers (CRP)), who saw that the requirements of these publishers would be different to the demands of any other sector, and that this sector would grow at a spectacular rate. Printech was established specifically to cater for this sector and it is the only printing company serving this sector that did not have to sever its links with the commercial sector in order to concentrate on this sector.

By virtue of being first into the market Printech was able to establish

strong footholds in all of the major publishers providing it with a broad and growing customer base. Such a base allowed Printech's sales revenue to increase from £2.8m in 1985 to £23m in 1992 (a compound annual growth rate of 30%) and this growth allowed them to opt for a flotation on the Unlisted Securities Market (USM) in 1987. At the zenith of their growth their share price reached 170p (issued at 66p) which gave the company a market capitalisation in excess of £40m.

As pioneers in this sector Printech were able to establish the competitive ground rules for the sector. They were the first printing company to attain both the ISO 9000 and the Q mark standard (they were one of the first indigenous firms in any industrial sector to attain the ISO) and by attaining such standards they effectively made these awards prerequisites to competing in this sector. Printech was also the industry leader in the areas of ship-to-stock awards, innovative pricing systems (using standard price tables or matrices rather than individual job quotations), customer service standards and in the standards of professionalism and image. Printech presented themselves as an innovative professional blue chip organisation which inspired confidence in the US publishers who were accustomed to dealing with such organisations and they became the role model for all other suppliers to emulate and ultimately better. Printech served as the benchmark against which all other printing suppliers were compared.

Printech were to the forefront of technology, being the first printing company (outside of newspapers and magazine printing) to purchase an offset web printing press (capable of producing runs in excess of 10,000 copies in a shorter time and more economically than sheetfed printing). The use of web technology was a radical departure for the suppliers in this sector but three years after Printech commissioned their web press two other print suppliers (Smurfit Print and Microprint) installed them with a further two (Mt. Salus and Colorman) due for installation by mid 1993. Printech were also the pioneers in the film-producing technology

Market Share by Print Supplier	
	% Market Share
Cahills	7
Colorman	12
DDS	8
Mt. Salus	14
Microprint	5
Ormond	8
Printech	20
Printcraft	10
Smurfit Print	16
Table 4.8	Source; Internal

Concentration Ratios in the Software Printing Sector									
Concentration Ratio	cr1	cr2	cr3	cr4	cr5	cr6	cr7	cr8	cr9
%	20	36	50	62	72	80	88	95	100
Table 4.9	Derived from market share								

having purchased a direct-to-plate scanner which allows the contents of a disk to be converted to a printing plate without having to go through the intermediate step of being produced to printing films. Although this activity is not a core activity for a print supplier, Printech's venture into this illustrated their overwhelming desire to service their customers' requirements to a higher standard than their competitors.

While the advantages Printech enjoyed were not sustained and were eventually replicated by their competitors they did allow Printech to gain

the dominant market share, and Printech are still a significant force in this sector.

(ii) Customer base

The second factor influencing the concentration levels is the publisher - supplier relationships, and going forward this factor will be the single most important factor determining the relative success of individual suppliers in this sector.

The customer base of a supplier has a huge impact on its level of business as it influences the degree to which it can utilise its machine hours. The concentration levels on the demand side (especially the one firm ratio) have a huge influence on the supply side. Those print suppliers who are allied with the top publishers have experienced a higher absolute demand and a greater growth than those suppliers who are allied with other publishers; this has afforded them the opportunity to utilise more fully their capacity and to take advantage of the subsequent product and related efficiencies. In particular those print suppliers who are allied with Microsoft have experienced, and will continue to experience, substantial growth and a huge absolute demand for print, far outstripping their competitors. Microsoft policy of dealing with the fewest number of print suppliers possible has resulted in its growth and demand being concentrated with four suppliers (Smurfit Print, Mt. Salus Press, Colorman and Printcraft). Together these account for 45% of the total market share and this share is increasing faster than any other publisher/supplier grouping. The existence of this situation has resulted in two groups operating within this market, one with Microsoft and one without it. The latter is deprived of Microsoft's volume, their role and influence as the market leader and the influence and capacity of four major suppliers. Assuming that Microsoft's growth continues (and there is no valid reason to assume otherwise) then this will have a pronounced effect on this market as the divisions between the two groups will become

more pronounced.

The suppliers not allied with Microsoft have to be content with forging links with the other software publishers. This leaves five suppliers competing for the balance of the industry's output (55%) from six software publishers which are growing at a slower rate than Microsoft. Within these five suppliers are the two largest print suppliers, Printech and DDS, thus competition in this sector is more intense than in the Microsoft sector. Table 4.10 outlines the relationship between the suppliers and the software publishers which is a key factor in this sector.

Software Publisher / Supplier Relationships							
	Microsoft	Lotus	Claris	Borland	Symantec	WordPerfect	QSS
Cahills		x		x	x		x
Colorman	x						
Donnelleys		x		x	x		x
Mt Salus	x						
Microprint			x		x		x
Ormond		x		x	x		
Printech		x	x	x		x	
Printcraft	x	x				x	
Smurfit Print	x						
Table 4.10	Source; Internal						

Relative Strength of the Buyer & Seller Group

Together the buyer and seller groups form a distinct cluster¹. This cluster is characterised by very close links between both groups and by the dedication of the seller's output to a very small group of customers. This cluster is not composed of two equal partners, rather the buyer group as a

¹ For the definition and discussion of clusters, see above pp. 14-15

whole is more powerful, dominant and influential than the seller group, and within specific customer-supplier relationships this domination varies. The actual buyer-supplier relationship that has been achieved is one of 'autonomy and domination', that is suppliers are formally independent, but are nevertheless steered by the software publishers, which defines the terms of trade. Autonomy in this sector also absolves the publishers from assuming responsibility for the outcome of the agreed conditions of exchange. While the relationship between the publisher and supplier is founded on co-operation and mutual exchange of information (colloquially known as 'partnerships') the distribution of the yields of co-operation is balanced in favour of the powerful publishers, and communications is simply a device to improve adaptation and compliance of the supplier to the customer's demand; these demands themselves are increasing in number and standard.

Four factors explain the dominance of the buyer group;

(1) The buyer group purchases large volumes relative to any individual seller's sales and it is more concentrated than the seller group. Individual buyers account for significant proportions of their individual supplier's revenues giving them increased powers and the opportunity to use such powers. The suppliers in this sector are either wholly dependent on specific publishers or on a group of publishers for their survival (table 4.6 illustrates the percent of the supplier's sales revenues that originates in this sector and table 4.10 shows the specific publisher-supplier relationships) and as a consequence the publishers are able to exploit the suppliers 'passive flexibility', their pliability to the purchase power of the publisher. The dominance of the buyer group will be compounded as the capacity available will eventually exceed the demand. While it is difficult to assess accurately the supply side, due to the availability of extra capacity through overtime, shift work, weekend work and so on, there is evidence to suggest that the days of phenomenal growth are over and that at best an uneasy equilibrium exists but in the near future an oversupply

situation will exist. Contributing factors to the excess supply are the demise of a number of hardware companies, such as Wang, Zenith and Digital, who all exercised a demand for printed manuals, and the introduction of extra capacity (especially web technology). The print sector is capacity orientated and the existence of excess capacity in this sector will on its own increase competition between the suppliers, and such a situation will ultimately benefit the publishers.

(2) The industry's product is undifferentiated, it is produced from a generic input (printing films) which requires no proprietary technology thus it can be produced by any member of the supplier group. The software publishers have, through their individual demands raised the standard within their own specific supplier group. As the individual suppliers attain these standards the publisher faces no switching costs in moving between supplier². The easier the buyer can switch between suppliers the greater the power of the buyer over any individual supplier and the greater the credibility of threat of withdrawal of demand.

Collectively the software publishers have raised the standards within the entire supplier group. As these demands converge (as demonstrated by the similarity of the ship-to-stock programmes) and the standards of the individual suppliers increases, the risks associated in switching to suppliers outside of the publisher-supplier group will reduce thereby increasing the number of potential suppliers to a publisher and increasing the credibility of withdrawal of demand. Mutuality or interdependence therefore only exists to the extent that both the software publishers and their suppliers are dependent of the sale of the finished item (the software package). The publishers are only dependent on their suppliers to the extent that there is no better alternative; through their actions individually and collectively, the publishers have ensured that there are suitable alternatives.

² The actual switching cost (replating cost) is not considered sufficient on its own to prevent the switching of printing films.

(3) The software manual is of strategic importance to the individual buyers. The software manual represents a very significance cost to the publishers, a cost which includes not just the printing costs but the technical writing costs, the platemaking costs and any scrap or obsolescence costs. The manual is also of strategic importance to the functioning of the actual piece of software and if the manual is of poor print quality or is technically poor or difficult to follow this will have a negative impact on the image of the software publisher. Individual buyers have heretofore invested considerable resources on controlling this input, as indicated by the professional quality and purchasing departments, and it is certain that they will continue to invest further resources to control this strategic input. While at present the manual fulfils the need of the software publishers this may not always be the case as this need is a generic one; the customer needs specific information regarding the functioning of their product, it is not mandatory for this information to be on paper.

(4) The suppliers face significant exit costs if they had to (were forced to) leave this sector. They have installed capital equipment which is optimal for the production of software manuals and ancillary services and while this equipment could be used to print other material it would put these suppliers at a disadvantage vis-a-vis other specialist printers. Specialist equipment procured for non print related activities, such as shrinkwrapping and weighing scales would not be required in other printing sectors and by leaving this sector that equipment would become obsolete. The guarantees of repeat business and of higher profitability in this sector are major forces that no supplier would forego lightly. In order to concentrate on this sector all of the suppliers have severed their ties with the non-software customers and they would find it very difficult to re-establish such ties. Paradoxically this sector is viewed as the 'creme de la creme' of printing sectors, even though the work is so basic, and by leaving this sector the suppliers face a major psychological and credibility cost. Specific suppliers (Printech, Ormond and DDS) have moved further

along the value added chain by investing in duplication and translation activities. These investments have substantially increased their exit costs and this form of investment is only applicable to this market. The greater the supplier's barriers to exit, the greater its dependence of the software publisher.

The seller group is totally dependent on the buyer group for its future growth. As a consequence the existence of this cluster is potentially a negative benefit as it is totally dependent on the future direction of the software publishers. Should the software publishers change their direction on software manuals there is nothing in the local economy capable of utilising the installed capacity. To date the buyer group has succeeded in demanding higher standards in quality and customer services and, given the dominance of the seller group the indications are that they will start to force prices down at the expense of the industry's overall profitability. More importantly, individual suppliers are wholly dependent on their few individual customers for their future growth and for them the developments within their customer base will be of greater significance than the developments in the software market as a whole.

4.2.3 Entry Conditions

Competition in an industry goes well beyond the behaviour of existing competitors and must be extended to include all forms of potential competitors. The threat of entry into an industry is dependent on the barriers restricting or limiting such entry. The software manual printing sector has been viewed by all print suppliers as a very attractive print sector from the point of view of growth, profitability and status. However, only one new supplier has successfully entered and survived in the market since 1988 (Microprint, an offshoot of Folens publishing) and the only new greenfield operation that was established to service this sector (Techman) has failed to make any impact.

The barriers influencing the operation of this market include not just those that deter new entrants competing in the market (market specific barriers) but those that insulate a specific publisher-print supplier relationship from competition from other members of the supplier group (customer specific barriers). From the individual supplier's view point the market specific barriers are an industry-wide concern as they affect all suppliers whereas the customer specific barriers are of more immediate concern as these relationships are critical to their individual success; anything that increases the contestability of these relationships is a potentially a very serious problem for those suppliers. The barriers to entry identified in the framework outlined in chapter 2 were classified as;

- a Product Differentiation*
- b Economies of Scale*
- c Capital Requirements*
- d Absolute Cost Advantage*

a Product Differentiation

The software manual is a totally undifferentiated product and one which requires no proprietary technology to produce; it can be produced by any member of the supplier group from the generic input (printing films) provided by the publishers thus there is no possibility of achieving true product differentiation. However, the suppliers in this sector have successfully differentiated the type of service that they provide to the software publishers. The service level provided ensures that all of the non-price requirements of their customers are fully satisfied; the attainment of ship-to-stock status, having a proven delivery performance track record and conforming to all administration requirements are the key elements of this service. This level of service has now reached a standard that many potential entrant would find difficult to attain and should they enter this market they would find it costly and difficult to replicate.

Ironically this form of service differentiation developed not from the supplier's desire to insulate themselves from potential competition but through the actions of the software publishers. By insisting on such service levels the publishers have increased their switching costs/risks associated in switching from one supplier to another. While these switching costs may involve some direct financial costs (replating charges) these are not viewed as being of significance as the publishers would not have to alter their way of operating. Rather it is the switching risks which are of more concern to the software publishers. These are the risks involved if the new supplier cannot match the performance of the previous supplier or attain the standards specified. The risks of a new supplier not delivering 'on time' or of not qualifying for ship-to-stock certification has been sufficient for many publishers to ignore all potential suppliers (especially foreign suppliers) and to concentrate their business with their (few) existing suppliers and to develop the autonomy and domination type relationship. By locking out the potential suppliers and not giving them an opportunity to prove their worth the software publishers have actually eliminated the only avenue open to potential suppliers of demonstrating their ability, and as a consequence those print suppliers not already in this sector will find this a major obstacle inhibiting their entry into this sector. The primacy attached to the level of service by the software publishers can be gauged by firstly that the software publishers have foregone the advantage of lower prices from foreign print suppliers who would be unable to provide the desired level of service and secondly they publishers have concentrated on perfecting this area in preference to tackling the area of price, at least until now.

While this barrier is a very potent market specific barrier, as the standards within the sector rise the risks faced by the software publishers in switching their business among the suppliers within the supplier group will decline and may ultimately reach a stage where the risk is minimal (and the cost negligible). As this happens the interdependence between the publisher and supplier will lessen and will be replaced by a

position of dependency, the suppliers being dependent on the publisher.

b Economies of Scale

Economies of scale refer to a decline in the unit cost of a product as the absolute volumes per period increase. Such economies are not restricted to the production function, but can occur in almost every business functional area.

The potential entrant could not expect to receive the same level of business as their established counterparts but yet they are required to offer the same price, thus the established firms benefit considerably from the volume throughput which absorbs their fixed costs and allows them to offer a lower price. In addition, the similarity and consistency of the printed work augments these efficiencies and has contributed to the higher margins and it provides the established suppliers with a greater opportunity to maximise their saleable machine hours and their profitability.

The economies of scale barrier is both an industry specific and customer specific barrier. Those suppliers who are associated with specific publishers enjoy this advantage over all other print suppliers, as they have benefited from their experience of dealing with that specific publisher.

c Capital Requirements

The capital requirements needed to compete in this sector can be divided into two distinct categories; capital for plant and equipment, and capital for non value added activities.

(i) Capital for plant and equipment.

The equipment required to compete in this sector is specialised and specific to it. Prior to the emergence of this sector the printing industry was characterised by firms which concentrated on specific aspects of the printing process; some firms specialised in printing while others concentrated on the downstream activities of folding and binding. To compete in this sector the suppliers must be capable of producing the entire manual within their premises (as all of the publishers are very reluctant to have their work subcontracted on an ongoing basis for quality reasons). This has forced many print suppliers to invest in additional capital equipment and the necessary skills to operate it. The print equipment installed by the suppliers is very specific to the printing of software manual. While other items could be printed (notably perfect bound books) this would require considerable modifications and even then the equipment would not be as efficient or as economical as other 'specialist' equipment.

Capital equipment is also required for non-print related activities, such as shrinkwrapping machines, sophisticated weighing scales, kitting machines (for assembling the manuals into sets) and blank page detectors which are mandatory if the suppliers want to ensure that a defect free product is produced all of the time. These capital investments could be considered as unrecoverable or sunk cost as they have little application in other print sectors hence they tie these suppliers firmly to this sector and increases both the entry and exit cost.

The capital requirements for print suppliers established in other printing sectors wishing to diversify into this sector are not as great as for a greenfield operation but are dependent on their existing equipment. However, both the greenfield operation and other established supplier would have to invest in the non-print related capital equipment.

The IDA's grant aided programme for this sector has enabled many of the print suppliers to purchase equipment which they otherwise would have been unable to purchase. This allowed some suppliers to compete in this sector where otherwise they may have been unable to do so. The recipients of these grants did have an advantage over those suppliers who were refused capital grants, however, the IDA's policy did not include the cost of all capital equipment, and over the last 24 months they have severely restricted the grants to this sector because of the potential overcapacity situation .

(ii) Capital requirements for non-value added activities.

Capital is required not just for plant and machinery but also for items such as inventory holding, customer credit and staff overheads in indirect functions unique to this printing sector, such as the quality and the production planning functions and the maintenance of a quality system.

The largest outlay of capital is required for the holding of inventory on behalf of the software publisher. As the publishers adopt or further refine their JIT philosophy this paradoxically requires their suppliers to hold higher levels of inventory, and is a direct function of the level of business between the print supplier and the publishers. The more successful a supplier is with a publisher the more inventory they will end up holding. In addition to funding the inventory the print supplier has the task of managing that inventory, not only is this an activity that they have no experience or particular competence in but it requires even more resources and money. In order to cope with this requirement many suppliers have had to hire commercial warehousing space or build additional space themselves and additional staff have had to be recruited to manage and control the inventory.

Capital is also required to fund all the indirect services required to compete successfully in this sector. Services such as quality control /

assurance, production planning and customer services are all unique to this sector and all require considerable funding. These activities do not add any direct value but they are critical to the success in this sector. The use of capital for these non-valued added activities reflects a non-productive use of that capital.

This particular barrier to entry is a market specific barrier, the established suppliers only have an advantage over potential entrants they do not have an advantage over each other.

d Absolute Cost Advantage

An absolute cost advantage is an advantage that accrues to existing competitors and is not replicated by potential entrants irrespective of their size or economies of scale.

Within the software manual sector the opportunities to create an absolute advantage are minimal because the influences affecting the suppliers are identical. They use the same machine technology (sheet fed or off set web) and in many cases they use exactly the same brand of machinery, thus no proprietary technology exists. The base raw material (paper) has to be imported and frequently the established suppliers would use the same brand of paper and ink from the same suppliers. The entire supplier group is based in Dublin, within close proximity to the buyer group; thus potential entrants not based within this region would be at a disadvantage.

However, three sources of possible absolute advantage do exist. Firstly, links with a strong and well established corporate parent is a distinct advantage in this sector. The presence of such a parent can offer the facility of low cost capital and the presence in this market may be part of a much larger overall corporate strategy. A corporate parent may also offer managerial or technical expertise and in some cases they may be

able to offer another service (through their parent) to the publisher. Within this sector this advantage accrues to four suppliers (Fig 4.5).

Print Suppliers with Corporate Parents	
Print Supplier	Corporate Parent
Smurfit Print	Jefferson Smurfit Group
Cahill Printers	Clondalkin Group
Microprint	Folens Publishing
Donnelleys	R&R Donnelley
Fig 4.5	

Secondly, while all print suppliers deal with the same trade unions, any productivity improvements, through changes in work practices, manning levels or demarcation, that an established supplier has negotiated with their trade union, would constitute an absolute advantage over the other suppliers. Such an advantage could be exploited in a number of ways such as low costs or by producing smaller batches of manuals more economically thereby following more closely the actual requirements of the software publishers and reducing the need to hold finished manuals in inventory. The likelihood of such advantages being created are remote given the strong unionisation of the entire print industry, but if they were created they would create a very significant advantage.

Thirdly, the suppliers position on the learning / quality curves gives them a distinct advantage. Through their cumulative experience they have perfected and refined their process and plant layout to yield the best results; such refinements are not available to a new entrant. The importance attached to the areas of quality and customer service reinforces this absolute advantage.

By their very nature absolute cost advantages are both market specific and customer specific barriers to entry.

4.2.4 The Role of Price and Entry Deterrent Tactics

Established firms can prevent / restrict entry by influencing the potential entrants expectation about the outcome of the post entry market. In the framework outlined in chapter two, price limiting was outlined as an important entry deterrent. However, the role of price as a deterrent in the software manual sector should be viewed not in the context of the price limiting theory (or how the price is set) but as the relative importance attached to it by the software publishers.

Up to now the software publishers have viewed price as being but one of a number of competitive elements; the other elements being quality (ship-to-stock), on time deliveries, and the provision of customer services. The primacy that has been attached to the non-price elements would suggest that price, up to now, was not as important an element as the perfecting of the non-price elements. This notion is supported by the exclusion, by the software publishers, of foreign suppliers from the supplier group, despite the acknowledged fact that such suppliers are more cost competitive than the existing suppliers (internal source).

The relative price insensitivity of the publishers has its roots in the actual software publishing sector. Here, as a consequence of the phenomenal demand for software products (see chapter 4) the software publishers' priority was the satisfying of this demand. Simultaneously, the publishers enjoyed very healthy profit margins, and this reduced their price sensitivity on their raw material, which only accounted for a small percentage (5%) of the average selling price. The concentration by the publishers on perfecting the non-price criteria is a conscious act, having its roots in their desire to subcontract to their suppliers all activities other than the core 'manufacturing' activities of disk duplication and product

assembly (a form of systemic rationalisation). However, the software publishers were not completely price insensitive, a degree of price competition existed between the established suppliers, but such competition was never augmented by the entry of a new supplier.

Two specific entry deterrent tactics are relevant to this market sector; the key role of the software publishers and the expected retaliation of the established players.

The primary deterrent to entry into this sector centres on the key role of the software publisher and whether or not the publisher is willing to trade with the potential entrant. The origins of this impediment lie in the importance of the publisher-supplier. The software publishers have an implicit strategy of dealing with the minimum number of print vendors possible and of developing strategic alliances (intense inter-company co-operation) with their limited vendor base. To date they have developed their suppliers to a very high standard and these suppliers have a positive influence on the publisher's business. This has allowed the publishers to concentrate their growing demand within their supplier base and they now have an opportunity to further improve their overall position by exercising their monopoly powers. As a consequence the publisher's motivation to expand their supplier base (and possibly dilute their monopoly power / domination of individual suppliers) is very low thus the establishment by a new entrant of a trading relationship with a software publisher is likely to prove very difficult as the potential entrant would have to displace an established supplier. To do this they would need to bring something new and innovative to the publisher, and such a competitive advantage would have to be sufficient to justify the risks/costs associated in switching suppliers. The opportunities to create such a unique advantage are very limited in the printing sector due to the identical nature of the influences and processes and the high standard of the existing suppliers. Additionally the close relationship that has been built up by the print supplier and publishers makes it more difficult for

this relationship to be severed, and as a consequence the psychological costs of severing such a relationship is as major obstacle in persuading the decision maker not to deal with the new entrant as is the potential risk that the new entrant will not reach the necessary standard.

Secondly the entire group of established suppliers have high strategic stakes in this sector. They all face significant exit costs and they are fully committed to this sector, effectively they are captive suppliers. Their commitment is illustrated by ;

- * defining their mission statement as 'suppliers to the software industry' and developing a strategy to support this objective .
- * the percentage of their turnover attributable to this sector and the severing of links with non software customers.
- * the investment in capital equipment specific to this sector and in capital equipment for non print related activities.
- * the investment in indirect functions such as quality assurance , warehousing and customer service department and the change in overall organisation structure .

In addition to the above, three suppliers (Ormond, Printech and Donnelleys) have moved further along the valued added services route by offering full duplication, printing and assembly facilities to their customers and as such they have the capabilities to perform the same manufacturing functions as the software publishers. This has significantly increased their strategic stakes in this sector and this form of investment represents a major cost and a radical departure from their core business.

These commitments to the sector clearly demonstrate to potential entrants that entry to this market will be met with firm resistance by the incumbents. The potential entrants must make sure that they can serve the publishers to the standard required while simultaneously competing

with the established players. The print industry is capacity orientated, the aim of the suppliers is to maximise their machine utilisation. It would, therefore, be expected that the established suppliers would use their existing capacity and pricing as an effective means of deterring entry and the threat of predatory pricing is more realistic from those suppliers who have the backing of corporate parents. The introduction in late 1992 and early 1993 of additional web fed capacity serves to bolster the notion that established suppliers will use their capacity as an entry deterrent weapon.

4.3 Conduct

In the framework outlined in Chapter 2 the area of conduct was reviewed under three headings; generic strategies, strategy dimension and competitive advantage. However, the application in this chapter will be done by merging the three headings together since in practice they are very closely related to each other.

4.3.1 Generic Strategy. Dimension and Competitive Advantage

By choosing a strategy a firm is attempting to create a defensive position in the marketplace and it will defend this position with a sustainable competitive advantage over its competitors. Of the generic strategies outlined in the framework (Chapter 2) one strategy is common to all suppliers, a focused strategy. Accordingly these suppliers form a *strategic group*, a group of firms in an industry that follow essentially the same strategy (Porter, 1980, p. 129).

The generic focused strategy can be considered further along three lines.

- (i) *Focus on the core business .*
- (ii) *Focus on a target buyer .*
- (iii) *Focus on extra valued added services .*

(i) *Focus on the Core Activity.*

The suppliers who have adopted this strategy have concentrated on their core business activity of printing, and on meeting the requirements of the marketplace as a whole. These suppliers view themselves as print suppliers producing software manuals and similar items. The suppliers who have adopted this strategy are Cahill Printers and Microprint.

While these two suppliers have severed some of their links with their non-software customers in order to concentrate more on the software manual market they have not severed all of the links, preferring instead to maintain their ties with other blue chip customers. Microprint prints school books for Folens Publishing while Cahills handles virtually all of the Governments printing requirement, thus neither supplier concentrates exclusively on this sector; the software manual market would account for 70%-80% of their annual sales revenue.

This strategy is the most fundamental of all three focused strategies and it provides the basis on which to further focus. The competitive advantage offered by this strategy is very straightforward and is based around the dimension of specialisation; by specialising on their core business they have become top quality printing companies committed to serving all of their customers to a very high standard. However this competitive advantage is spurious as it does not really constitute an advantage over their competitors, who are also specialising on their core business. Similarly the advantage is not sustainable since their competitors have also adopted it.

This strategy is very cautious, it does not focus exclusively on the market or on a particular customer nor does it involve moving away from core business. By adopting this strategy they have minimum exit barriers and are the best positioned should the software manual market contract in value or volume or should the power of the publishers severely affect their

business. However, given that a significant percentage of their business is in this market any decision to exit out of it will not be an easy or costless one but will be less difficult than for other suppliers. Any exit decision will be made easier by virtue that these two suppliers have the backing of a corporate parent.

(ii) Focus on a Target Buyer.

Four suppliers have further focused their strategy by dedicating themselves exclusively or almost exclusively to supplying one major software publisher. This strategy appears to have evolved through the actions of the software publisher rather than developed through any conscious actions on the part of the suppliers. The suppliers pursuing this strategy are Smurfit Print, Mt Salus, Colorman and Printcraft and the strategy is focused on Microsoft .

The rationale behind this strategy is that these suppliers can focus clearly on serving Microsoft to an exceptionally high standard, and by doing so they exclusively benefit from the huge volume of work generated by Microsoft and from its exceptional growth rate. These suppliers have 'strategic partnerships' with Microsoft and in return for being partners and benefiting in Microsoft's dominant position, they are expected to dedicate a substantial percentage of their capacity / turnover to Microsoft. This portion may exceed 80% with some of these suppliers and as Microsoft's print requirement grows this group of partners is expected to absorb this growth rather than Microsoft having to commence trading with another supplier. In this scenario a definitive 'autonomy and domination' type relationship exists with the domination almost being total.

This competitive advantage created by this strategy is specific to one customer, and is based on the dimension of specialisation; by focusing so narrowly the belief is that they can provide a level of service unequalled

by other suppliers. The advantage created is specific to one customer, and can only be considered as an advantage over those suppliers not supplying Microsoft. So far the advantage has been sustainable insofar as it has been very effective in insulating this group from competition from the other print suppliers. However, this owes as much to Microsoft's reluctance to introduce additional suppliers as it does to the existing suppliers' success in creating an advantage over the non-Microsoft suppliers. Providing Microsoft continues with its policy of only dealing with these four suppliers they will continue to enjoy this advantage. Rather than creating a defensive position against the main competitive force this strategy completely exposes them to the most potent competitive force, the software publisher.

As with all highly focused strategies this is a high risk strategy. These suppliers are wholly dependent on one customer for their future development and survival, should Microsoft change its approach to software manuals these suppliers will be left with a strategy and competitive advantage that has little significance in the overall marketplace. By being so focused this strategy may be viewed as a disadvantage by other software publishers and book publishers, who perceive these four suppliers to be so committed to one customer (and dominated by one publisher) that they (the publishers) would be unable to trade successfully with them. The immediate dilemma facing these suppliers is should they participate in the future growth of their one customer or should they limit their exposure and diversify either out of this sector or within the sector by widening their customer base.

The existence of this strategy has a huge significance for the rest of the marketplace and the level of competition. The exclusivity between the suppliers and Microsoft has deprived the rest of the marketplace of these players, their ideas, desire for market share and most importantly a huge and growing percentage (45%) of the work. From the perspective of these suppliers it has insulated them from competition from the other

suppliers.

(iii) Focus On Valued Added Services

The third dimension along which the suppliers have chosen to further focus is that of providing extra value added services which are or may be required by individual software publishers. These additional services centre on the provision of disk duplication, software assembly and translation facilities. The suppliers who have adopted this strategy are Donnelleys, Printech and Ormond ;

Within this strategy two sub strategies have developed;

(a) The Ormond has the facility to produce all of the publisher's print related requirements not just the software manuals. Through their associated companies they can produce the other print items that may be required such as the retail box and small cards. The group can also offer a complete disk duplication, assembly and distribution facilities.

(b) Donnelleys and Printech have further refined their strategy by providing, in addition to the software manual, a translation facility (for translation of the software and/or manuals from English into other languages), disk duplication, assembly and distribution facilities.

This strategy can be viewed as having two mutually exclusive elements and paradoxically it provides two competitive advantages. At the basic level this strategy incorporates Strategy 1 since the provision of the valued added services is not dependent on the provision of the manuals. Similar to Strategy 1 it is focused along the dimension of specialisation (on software manuals and related print items) and accordingly the competitive advantage achieved is spurious. The second element of this strategy is the provision of the valued added services (either as a stand alone service or combined with the production of the manuals). This

element is focused along the dimension of vertical integration and the competitive advantage sought by this overall strategy is the provision of a complete software package (manuals, disks and distribution). This provides these suppliers with a distinctive competitive advantage, there is a clear advantage over the other suppliers, however it is not a sustainable advantage as the necessary equipment and skills sets are readily available, although they do involve considerable capital expenditure.

This strategy is widely focused on the software publishing industry and is relevant to the software publishers that have established here, to those that may establish in Ireland, or to those that do not want to establish a 'manufacturing' operation base but would prefer to subcontract (outsource) their software production process to indigenous companies and have them supply their product to the European marketplace. The suppliers who have adopted this strategy are now actually performing some of the same core 'manufacturing' activities as the established base of software publishers. Consequently the existence of these facilities is largely irrelevant to the buyers as they view this as their core activity and one that they have committed to undertaking themselves; these facilities may be used by the publishers but only to cope with short term demand fluctuations. Furthermore the use of these facilities by a publisher would have some implications for their taxation position, hence they have little or no advantage in using these facilities. If a wider view is taken the publishers could view the relevant suppliers as being in competition to them; they (the supplier of manuals to a publisher) are carrying out the production operation for one of that publisher's competitors.

Similar to Strategy 2, rather than take a defensive position this strategy actually exposes the three suppliers to the volatile nature of the software publishing industry and the changes that occur in this industry as it matures will have a serious consequential effect on these suppliers. Any

move away from a core activity is a risky one as it involves dealing with new and unfamiliar technology and skill sets and offers services to customers in which the suppliers have no competence. This strategy has increased the exit barriers of these suppliers and they now have very strong strategic reasons for staying in this market. Their future concern is with the developments in the software publishing industry and not just the future of the manual.

4.3.2 Critique of the Generic Strategy

It was identified in Chapter 3, that suppliers within the overall print industry have specialised in particular market segments due to the capital requirements and the unique demands of their customers. In more recent times this specialisation has been encouraged with print suppliers being advised to identify and develop market niches (McIver, 1977: FPPBI, 1992: HMSO, 1993). However the strategy adopted by the software manual suppliers have been to sub-focus almost exclusively on a sector within a market niche (the software manuals is viewed as a part of the wider market of book printing). Moreover the strategy has not created a defensive position around the dominant force, the software publishers, rather it has (with the partial exception of Strategy 1) further exposed the suppliers to this force. The competitive advantage sought by this generic strategy is one of differentiation based on the dimensions of specialisation (and quality), or integration and no individual supplier has a true and sustainable competitive advantage over its competitors.

The absence of a strategy based on a low cost position is both surprising and expected. The lack of scope that the print suppliers have to reduce costs, due to the similarity of cost conditions has stifled their approach to being cost competitive and has reduced their scope to create such an advantage. This also reflects a lack of innovativeness and creativity required to become a cost leader, especially to tackle inefficiency in the demarcation and manning levels. Furthermore it illustrates the

reluctance of a supplier to take up this position as they are unsure of their competitors' and customers' reaction. The absence of a cost based strategy is also a throw back to the early days of the industry when cost competitiveness was not a critical factor and the importance of a competitive advantage was greatly reduced.

Of the five possible dimensions relevant to this market, that are highlighted in the framework, the dimensions of cost position and technical position (where in this case technical refers to process improvements), have not been adopted by any supplier.

The crucial question facing the entire supplier group now is not what is their strategy but is it capable of insulating the firm from the future competitive forces (the software publisher) while simultaneously creating a long term competitive advantage. Based on the likely future outcome of the industry cost competitiveness will play a key role.

CHAPTER 5

Future Competitive Forces

Historically the software manual printing sector has been characterised by a low intensity of competition between the established players. This inactivity prompted a report on this sector to conclude that "margins in this sector are above the industry norm with average margins being twice that of the general printing sector" (Allied Irish Securities, 1989). A number of reasons exist to explain the apparent low level of competition in this sector.

The phenomenal growth experienced in this sector and the absolute demand for manuals was unprecedented in any printing sector and the main challenge facing the individual suppliers was the management of this growth which was in stark contrast to previous times when their problem was actually finding the work. The growth in demand for software manuals exceeded the available print capacity, and the subsequent investments in additional capacity were reactive, following the growth in demand (such was the shortfall in capacity that it forced many of the software publishers into using a number of foreign print suppliers). This demand coupled with the higher than normal prices that were being charged (due to the excess of demand over supply) and the similarity in the print work created healthy profit margins (approx 16%) which greatly reduced the need for the suppliers to compete with each other for the work. The higher prices were tolerated by the publishers because as a percentage their selling price the manual cost was very low (5%) and their priority was maximising their sales revenue and benefiting from the high margins that existed in the software publishing market.

The future level of competition in this sector will be more intense than in the past and the single dominant force will be the role of the software

publisher. This role will manifest itself in three areas:

- (i) Use of monopoly power*
- (ii) Change in the manual specification and procurement policies*
- (iii) Use of alternative technology*

- (i) Use of monopoly power*

The role of the buyer group in any market is to reduce prices and / or increase the level of service and quality. The dominance and strategic importance of individual software publishers to individual print suppliers has evolved as this market sector has progressed through its lifecycle. This evolution has resulted in the software publishers now being in a totally dominant position as their suppliers are effectively 'captive suppliers', being dedicated exclusively to specific software publishers and to the software manual printing sector in general.

To date the software publishers, through their individual actions, have collectively raised the level of quality and service to a very high standard without incurring any incremental costs and they now have the same opportunity to use these powers to drive down prices while raising the service level even further. The extent and intensity of the pressure on the software publishers to reduce their costs will be a direct function of events in their core market. As the software industry journeys through its lifecycle and approaches the maturity stage it is expected that the average unit selling price will decline as competition intensifies among software publishers. One of the forces influencing such price reductions will be the cost of hardware products, notably PCs, which are complementary products for software products. Over the last 12 months hardware prices have fallen dramatically and following on from this over the same period price competition among the publishers has intensified significantly, especially in the upgrade sector of the market..

In recent months the share price of a number of major software publishers (excluding Microsoft) has fallen dramatically reflecting the investment community's belief that this sector has lost much of its attractiveness (due to the announcement by certain publishers, Symantec, Borland and Adobe of financial losses or lower than expected earnings). While this is not a perfect indicator, the decline in share prices does reflect a maturing of the industry, the heightening of competition and once again it illustrates the strength of Microsoft (Table 5.1). As the average unit selling price declines it will force the software publishers to review (and reduce) all of their costs so that they can maintain their profitability thus as a percentage of the selling price the manual content will increase. In absolute terms the software manual is the major cost item (including the technical cost of writing the manual, the platemaking and scrap charges) and with the volumes required significant increases in profitability can be made by controlling and reducing this cost; the software publishers based in Ireland could reduce their costs worldwide by \$100m if they reduced their manual content by 50% (based on the assumption that the manual content is 5% of their revenues) .

Share Price of Selected Software Publishers (July 1992 - February 1993)					
Share Price	Microsoft	SPCO \$	Borland	Abode	Symantec
July	\$72.12	\$8.75	\$43.5	\$46	\$39.5
Aug	73.75	10.0	46.0	38.12	20.5
Sept	74.5	9.37	42.5	34.62	17.37
Oct	79.62	7.75	40.25	27.75	10.25
Nov	89.62	9.0	33.5	35.0	12.62
Dec	93.12	8.75	24	34.25	12
Jan	85.37	8.75	22.25	31.5	13.62
Feb	87.5	12.25	21.62	43.5	10.62

Table 5.1

Source; Internal

To date the main preoccupation of the buyer group has been to exert its influence by raising the levels of quality and service, and to delegate non-essential activities to the suppliers. Their success in achieving this helps to explain the decline in suppliers' profitability since these activities are funded from profits and are not directly rechargeable to the customer. As the publishers delegate more of their non-essential activities, which the suppliers are not in a position to refuse, this will further constrain the sector's profitability. A gauge to the profitability in this sector can be obtained by reviewing the profit figures of Printech PLC (Table 5.2). While this is not entirely satisfactory and in the absence of alternative official data, this review can be taken as the closest approximation to the sector's average .

Profit Figures of Printech PLC						
	1987	1988	1989	1990	1991	1992
% Profit	14.7	16.0	11.7*	16.9	12.6	12.6
Profit is based on profit before tax and is a percentage of annual sales revenue						
* The 1989 figure includes an exceptional loss						
Table 5.2			Source Annual Reports 1987-1992			

Table 5.2 illustrates that current profit margins are running at 12.6% and the trend is downwards. While these margins are still healthy they are not spectacular having been reduced from the 16.9% level which encouraged diversification into this sector initially. Additionally the 1992 results of Printech note that margins will continue to be lower due to increased price pressure within the sector; this reduction is attributable mainly to the use by the software publishers of their monopoly powers to reduce their prices and raise the overall level (and type) of service.

The expected future state of the software manual printing sector will be conducive to the further use of these power by the publishers. The market will have a surplus of capacity and the costs/risks of switching between the suppliers within the overall supplier group will be minimal. Given the

capacity oriented nature of this sector and the need for each supplier to maximise the machine hours the existence of surplus capacity alone will increase competition among suppliers, which will ultimately benefit the software publishers.

(ii) Change in manual specification

A number of software publishers have instituted critical manual design changes in an effort to become more cost competitive. Manuals are now predominantly perfect bound or saddle stitch finished and the text is now more commonly printed in one colour as opposed to two or four colours while the covers are printed in two colours whereas previously they were in four colours. The grade of their paper has also been reduced to a level where it is at the minimum standard sufficient for the print suppliers to use. These changes have had a major effect on the value of the output of this sector and they have altered the capital equipment requirement..

The focus of the print suppliers is with equipment utilisation. Hence their concern is with the volume of work to be printed (number of pages to print) as opposed to the actual number of manuals required. Accordingly any change that affects this volume will adversely affect the suppliers. Further design development will concentrate on reducing the overall extent or page count of the manuals. This will happen by the consolidation of multi-manual sets into a lesser number of manuals with a corresponding reduction in the overall page count. The latter could occur by simply fitting more words per page (reduced font size or style layout) or by consciously omitting certain (non-critical) sections of the manual. In addition to any design / layout changes there are developments in the software marketplace which are having a profound effect on the actual need for, and extent of, the software manuals as they currently exist; as the software markets matures and the users of the software become more sophisticated / informed the style, layout and design of the manual will change. These developments are;

- (a) Increased computer literacy together with the advent of more user friendly and graphically based Personal Computers will make computer software easier to use . As a consequence this will lessen the demand for huge volumes of print and the large number of manuals required to explain the workings of the packages. This has already begun with the development by Microsoft of their 'Windows 3.1' program and the development by other software publishers of software packages to work on this platform .
- (b) The growing development of computer based learning (cbl) which acts as an on line help and tutorial facility within the actual software programme, thereby allowing the user to learn as they use the software. All of the software producers are developing extensive 'help' files which should cater for the majority of the problems likely to be encountered by the users. These files are designed to be very user friendly. The developments in the disk drive and media industry (especially CD ROM) are advancing this development and as PCs become faster and have more memory this threat will become more credible. The use of the actual PC to hold and store the same information as the manual corresponds with Lancaster's definition of the product as being a bundle of characteristics; the qualities are still in the software product albeit under a different guise.
- (c) The use of third party educational / training courses is providing all users with an opportunity to be professionally trained on particular software packages by 'qualified' tutors (there are no training programmes for these tutors). These courses are becoming more commonplace and they are advertised almost daily in the national newspapers. For corporate users of software packages they may be very efficient and cost effective way of training their staff. A more recent development is the introduction by specific publishers of video courses designed to educate and

inform the software user.

- (d) The increasing use of Local Area Networks (LAN) which now make it possible for many users to legally use one software package has resulted in an increase in the number of legal users of a software package without a corresponding increase in the number of packages sold. A reduction in the number of packages required will lead to a corresponding reduction in the number of printed manuals required; LAN users will be provided with manuals for their communal use.
- (e) A number of software producers have reduced the number and extent of their manuals and are instead operating a 24 hour toll free help lines which are manned by qualified personnel to resolve any difficulties the user has and which are not answered by the limited set of manuals which accompanies the package. As a complement to this the producers offer a facility whereby the user can send away for a comprehensive set of manuals at a greatly reduced cost.

The medium term view of the software manual is that it is likely to be composed of elements from all of the above; the introduction of manuals with a reduced page count, the inclusion of a limited number of manuals in the package, extensive help files, computer based training facilities and a comprehensive technical support service. Manuals as they currently exist will not be provided with all software packages but they will have to be specifically ordered by the user.

These changes will reduce the volume of print that is required. Such a reduction will result in a surplus of capacity and an intensification of competition which will negatively affect the profitability of this sector.

(iii) Use of alternative technology

The only overriding requirement for the software manual at the moment, is that it be printed in a book format. There is no particular reason (technical or economic) restricting the production of the manuals to the existing technology; a very potent threat facing the suppliers is from alternative sources of production which match more closely the desires of the software publishers, small batches more frequently.

A major threat to the existing technology will come laser-style / electronic printing devices which employs 'state of the art' computer technology. One such device is the Rank Xerox 'Docutech' and similar variations, which have refined the existing photocopying technology to allow entire manuals to be printed and gathered together. Currently, this technology is unable to match the benefits (especially quality and cost / volume restrictions) from the existing printing machines but it is only in the early stages of its development and further refinements to it will help eliminate its current weaknesses. A recent improvement on the Docutech is the Indigo's 'E-Print 1000' (to be formally launched in September 1993). This technology merges the performance and quality of conventional printing with the convenience of laser-style electronic printing. The major advantages of this technology are that there is virtually zero set up time and as a consequence there is no economic order quantity, and the machines can be operated by non-print-qualified persons thus eliminating the influence of the printing trade unions. These advantages make technology very attractive to the software publisher and hence a very real threat to the existing suppliers.

The potential of this new technology is demonstrated by the fact that two print suppliers (Ormond and Donnelleys) have actually invested in the Docutech and are currently supplying manuals from it to some of their software customers. Currently there are a number of print suppliers in the UK that do not use the conventional print technology, rather they

have opted for this newer photocopying technology, and in Dublin one company currently specialises in Docutech activities for all print sectors. Such organisations will enjoy an absolute cost advantage over the conventional print suppliers who have a higher overhead or cost structure and are constrained by the trade unions and their practices.

A second threat to the existing supplier group will come from those suppliers using smaller size printing presses and ancillary equipment. Ironically this equipment was the forerunner to the equipment that is currently being used to produce software manuals. This equipment is ideally suited to the printing of one colour manuals in smaller batches on a more frequent basis and it has two major advantages over the contemporary technology. Firstly it is more economical to run (having a reduced cost per machine hour, due to reduced manning levels and a lower machine cost) and secondly its origination costs and set up charges are lower than those on the modern day sheet fed machines. Again the threat to the existing supplier group is from suppliers who specialise in this technology.

The severity of the threat from the alternative technology will be influenced by the speed at which the software publishers change to the new technology and from this viewpoint the software publishers are masters of their suppliers' destiny. Their impetus will come from the pressures within their own market to control this strategic input. The relevant question for the supplier group as a whole is not whether their existing complement of equipment is suitable and capable of handling the demands of the publishers but whether it will satisfy the future needs of their publishers customers.

The longer term threat facing the supplier group may come from the future shape of business within the software publishing industry. The core activities of the software publishers is software publishing, the

development and marketing of software, thus their competence is in software writing and not technical manual writing. At present software is packaged and sold in its current format as there is no other viable alternative method for the customer to receive their software. The crucial questions that will seriously affect both the direction and future of the software manual and its 'manufacturing' process and the supplier group is how the software publishers will distribute their software to their customers. A change to the distribution method will not alter the core activity of the publishers. The motivation for the software publishers to move to another means of getting their product to the customer is enormous, they could save a significant percentage of their total 'manufacturing' and distribution costs; such costs are marginal since they are not associated with the software publisher's core business. As market leaders / pioneers in the information technology field they also have the capabilities to develop effective alternative distribution methods.

To illustrate how swift and fundamental a change in distribution method policy can be one only has to look at Dell Computers. Dell has eliminated the retail outlet, which previously had been the main vehicle for selling PC's (and a major cost), and one can now order a customised Dell PC by 'phoning a toll free number at prices substantially lower than the mass produced 'standard' PC. These innovative actions by Dell have totally revolutionised the PC sector and this transformation could occur in the software sector. For example, consider the scenario whereby software can be ordered by 'phoning up a bureau, quoting your credit card number and they will download the software to your PC via a modem. Such a scenario is not totally unrealistic or far fetched given the quantum improvements made in the information technology field and such a scenario would have dramatic consequences for the entire supplier base and for the 'manufacturing' operations established in Ireland.

CHAPTER 6

Recommendations for Industrial Policy

6.1.1 Industrial policy and the non-traded sector¹

In the context of a small open economy a non-traded good can be defined as a good the price of which is determined by the supply and demand within that economy. It is thus distinguished from traded goods, the price of which is determined exogenously to the small open economy by developments in the rest of the world (O'Rourke, 1990, p.408). O'Malley (1985, p.20) describes non-traded activities as those where there is a significant degree of natural protection against foreign competition in the domestic market due to logistic or transport costs. Some international trade will exist as complete natural protection is rare. Non traded industries are characterised by a low level of imports and exports.

A good can be non-traded for several reasons, the most obvious being high transport costs. If transport costs are very high, such as in the transportation of cement, then it becomes cost prohibitive to export and import, and the price of that good will be determined within the economy. A second reason is logistics; commodities such as perishable items like milk cannot be transported over long distances, while the provision of services such as hairdressers, accountants and solicitors between countries is impractical. The third reason is government intervention. Governments may block the import of certain goods or severely limits them by imposing strict quotas and / or tariffs. Goods and services which are defined as non-traded will vary from country to country and within a country these goods and services will evolve over time. The boundaries of such goods are thus endogenous to the economic system and depend on the actions of the rational economic agents. For example if transportation cost decline significantly, goods that were previously non-traded

¹ The discussion in the pages that follow is drawn from O'Rourke (1990, p 408 - 417)

may become traded providing the economic agents are willing to exploit such a change .

One major problem arising in the empirical work on non-traded goods is that while it is easy in theory to say whether a good is internationally traded or not, it is very difficult in practice to say whether a particular sector is non-traded. For example the indigenous banking sector contains elements that can be viewed as non-traded (branch banking) while certain other banking activities occur within the international financial community (O'Rourke, 1990, p 409). The same is true of the printing industry, certain aspects of this sector such as newspapers and book printing face foreign competition whereas other sectors like Government reports and simple price leaflets do not.

O'Rourke (1990) argues that the importance attached to the role of the non-traded sector has been undermined because of the mistaken belief that because the traded sector earns foreign exchange all other sectors in the economy depend on it and consequently that Government policy should focus exclusively on this sector. Non traded activities in their own right are important to the overall economic wellbeing, he argues, for the following reasons:

Firstly, in order to increase GDP attention should be paid to both the traded and non-traded activities. Given that technological progress is an important requirement for an increase in GDP, producing more goods and services with a given amount of resources, then technological progress in both sectors is equally important and such progress is not dependent on the traded sector. There is an implied assumption that because non-traded activities are sheltered from foreign competition they are inefficient and possess monopoly powers. Such an assumption is invalid and it is important to remember that non-traded activities face domestic competition so they are not sheltered for all forms of competition.

Secondly, a country's competitiveness depends on its non-traded sector (competitiveness being the rate of return which factors of production specific to the export sector in a given country can earn given foreign competition). It is the price at which the non-traded inputs are supplied into the traded sector that determines how they can compete against foreign competition.

Thirdly, if there are positive externalities to the production of a good (benefits arising from the production of the good which accrue to society at large, but not to the manufacturer of that good) closed economic theory suggests that there is a case for subsidising the production of that good. A typical externality is a 'linkage', where the output of one industry is used as the input to another; where this output is non-traded and used widely in the economy considerable benefits can be gained from increasing its productivity in any sense .

As a illustration of the manner in which non-traded activities have been discriminated against by industrial policy, O'Rourke (1990) cites the example of the NESR Report (1982) which recommends that non-traded businesses should be discriminated against by reducing the grants available to them and by making it harder for them to obtain grants vis-a-vis companies exporting .

Conniffe and Kennedy's report (1984, p.43) on unemployment added that "a primacy attaches to the open or competing sector in that it is the only sector in which expansion will tend to alleviate rather than exacerbate the fundamental balance of payments and fiscal constraints". In addition, the 1986 NESR report claimed "that those sectors of the economy which exclusively or predominantly serve the domestic market cannot be regarded as an independent source of sustained growth " (p. 147).

The assumption that the non-traded sectors are unimportant to the

economy and are therefore undeserving of appropriate industrial policies is incorrect. Industrial policy is "designed to affect the general market mechanisms of production and resource allocation" (Lindbeck, 1981, p. 391), and such mechanisms are not the sole domain of the traded sector.

6.1.2 Industrial Policy for the Print Sector

Similar to other non-traded sectors the print and publishing sector has been devoid of a coherent industrial policy. Such an absence is disappointing given the importance of the sector to the overall economy and the opportunity that exists for import substitution. For the future success of the print sector it is vital that such a policy be developed and implemented, and that it be based on correcting the structural deficiencies of this sector as outlined in the McIver Report (1977) and the submission made by the FPPBI (1992).

The basic thrust of industrial policy to date (for all sectors) has been the creation of jobs. While this is a very worthwhile objective the salient point relating to the print industry is that it is overmanned and as a consequence inefficient. The aim of any future industrial policy for this sector should be to concentrate on improving efficiency and competitiveness while simultaneously constraining costs. This may in the short term lead to job losses but in the long run a competitive print sector will create additional 'true' jobs (as opposed to jobs automatically created due to demarcation and manning levels). While such a proposed move contradicts the positive externality benefit outlined earlier, it is crucial that the fundamental problem of overmanning be tackled.

Wage and salary costs need to be controlled as these have a major influence on the sector's competitiveness being the single largest expense items. The focus of wage constraint needs to be at the craft level, since it is these craftsmen that historically have commanded higher levels of pay.

Twenty four percent of the industry's employees are craftsmen or apprentices. As the sector progresses down the technological road the industry is moving away from its craft basis.

In tandem with wage and salary costs the training of personnel also needs revising. The printing industry can no longer afford to be insular, it faces competition from other sources of text and colour reproduction and it must adapt its training needs to cater for the newer technologies. The current four year apprenticeship scheme is too archaic and is in need of immediate up dating to a work module basis. The technological improvements in the sector will radically alter its training needs.

Overall productivity needs to be improved by the elimination of restrictive practices and lines of demarcation. Essentially this is an activity that will be conducted at plant level but it requires the co-operation of the trade unions. Notwithstanding that this is a management task it should be a priority for the policy makers to develop the 'atmosphere' where such improvements can be made. The current practices are the most serious threat facing the printing industry and it is imperative that this deficiency be corrected. Providing the demarcation lines are removed the foundations should be laid to ensure that the can never recur and to this end a programme of cross training should be encouraged, which will result in the personnel being qualified to operate a range of printing, folding and binding equipment. This would eliminate the craft basis in the sector and in its place would be a print technologist type of position. The ground work for such fundamental changes needs to be laid as early as possible as this is not a project that will come to fruition in the short term.

The capital intensive nature of this sector and the changing face of 'print' technology could result in access to capital being a factor constraining the sector's growth. As a result access to capital should be easier. Such access can arise either through a better association between the industry

and the capital markets and/or by reintroducing capital grants. Should the latter arise the criteria for allocating capital grants need to be clear and distinct and it should not be based on the number of projected new jobs (as is currently the case) but should be based on improved productivity / competitiveness or import substitution.

A policy of firm rationalisation needs to be pursued to correct the problems created by a multitude of small establishments. Such fragmentation is a constraint on the industry's overall financial performance. Such a policy is a major undertaking and it would require the assistance of a number of State agencies.

The reliance by the major printing companies on a small group of the software publishers is a main concern. Such a dependence exposes these suppliers should the publishers alter their strategy and there is nothing in the local economy capable of taking over the demand. Accordingly steps need to be taken to minimise the dependency of these suppliers on specific publishers. The software publishers themselves have a major role to play in ensuring that this dependency is reduced. The sector needs to establish a mechanism to monitor the future trends in the software manual sector. A suggestion is a working party type of arrangement of both the publishers and the suppliers .

Opportunities exist for the print suppliers to explore other technical manual markets, similar in their needs to the software sector. These links with other publishers need to be carefully explored. Further opportunities exist for import substitution of general reading books. The success of indigenous companies competing with foreign competition is directly related to improvements in the industry's competitiveness. Only if such improvements come about can the industry look to the export markets .

It is vital that a coherent policy be developed for this sector to take into account the sector's uncompetitiveness, skills requirement, wage cost, and

future technology. The sector is a net contributor to the economy and every effort needs to be made to ensure the long term success of the printing industry . By improving their competitiveness, technology and skills the individual print suppliers will be in a better position to face all forms of competition (foreign, indigenous and from new technologies) and collectively the industry's contribution to the economy will be improved. The print industry should no longer be viewed as a craft industry but as manufacturing industry that produces printed items.

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