THE MARITIME FOOD PROCESSING INDUSTRY

THE MARITIME FOOD PROCESSING INDUSTRY: A COMPARISON OF THE COMPETITIVE CHARACTERISTICS OF LOW AND HIGH VALUE ADDED FIRMS

By

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A Thesis

Submitted to the School of Graduate Studies

in Partial Fulfillment of the Requirements

for the Degree

Master of Arts

McMaster University

January 1994

MASTER OF ARTS (1994) McMaster University
(Geography) Hamilton, Ontario

TITLE: The Maritime Food Processing Industry: A Comparison of the Competitive Characteristics of Low and High Value Added Firms

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ABSTRACT

The Maritime provinces have been historically characterized as primarily low value added resource producing economies. One of the sectors identified most with this economy is food processing, which accounts for a quarter of the region's manufacturing output. Among the problems facing the Maritime economy has been an inability to add value to the region's natural resource output. This has left the economy reliant on commodity production which, in the long run, is vulnerable to outside competition.

The region has also been economically depressed compared to other parts of Canada. Many initiatives have been undertaken to reduce disparities of income and employment, but by and large they have been unsuccessful. Some have argued for a shift in regional development policy away from incentives to attract new industry and towards the development of local industry. One possible form this development might take is increased value added to the region's resource production. It was hypothesized in the thesis that there are obstacles to higher value added production which follow from the more sophisticated competitive requirements of higher value added firms.

To determine the degree of value added production and the characteristics of higher value added firms, a mail survey was sent to the population of food processors in the region. Based on the results of the survey it was found that higher value added firms rely on often more advanced factors and strategies to establish and maintain their competitiveness. Although there are many firms in the region producing higher value added products, these firms do not have significantly higher growth rates than lower value added firms. This can, in part, be explained by weaknesses in the region's ability to provide the factors and incentives which higher value added firms rely upon to be successful.

It was also concluded from the study that if it is the goal of regional development policy to encourage higher value added production, development efforts should be broader in focus. In other words, policies cannot be based primarily on direct incentives to business.

ACKNOWLEDGEMENTS

First of all I would like to thank my supervisor, Bill Anderson, for his guidance and patience through this, at times, seemingly unending process. In addition to his moral support, Dr. Anderson and the Department of Geography also provided financial assistance which made this research possible. I also owe Joan Parker my gratitude for helping to provide the departmental resources I needed for the questionnaire.

It almost goes without saying that I am indebted to the respondents to my survey. They found the time in the their busy schedules to answer 'another survey' at a time when many firms are struggling to survive.

It is also important to acknowledge the support of the Canadian Manufactures Association (Nova Scotia and Prince Edward Island offices) for their support of the mail survey. I believe their help substantially increased the response rate. I would also like to thank Dale Blair at Industry Trade and Technology for his time and, in retrospect, incisive insight into the Maritime food processing industry.

Finally, I would like to thank the Brown "Clan" for keeping my head on straight over the past two years. I would particularly like to thank my parents for putting up with me.

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CHAPTER 1

INTRODUCTION

The overall failure of regional development efforts to reduce disparities of income and employment experienced by the Maritime provinces has put many of these policies into question. Industrial incentives, which are the cornerstone of federal regional development initiatives, have been on balance ineffective (Savoie, 1992) and do not address the structural problems facing peripheral regions (Meyer-Krahmer, 1985). Instead, many argue policies should be oriented towards the promotion of industries which already exist in a region (Savoie, 1992; and Meyer-Krahmer, 1985). As Savioe (1992, 259) notes,

> "Special measures for slow-growth regions should...go beyond standard cash grants to launch new businesses. More attention should be paid to local strengths and local entrepreneurs than in the past when solutions for slow growth regions were pinned on the hope of attracting footloose industrial activities from elsewhere."

In other words, the focus should be on industries which are based on the region's competitive advantages. Implicit in this argument is the idea that it may be considerably easier to develop industries where an advantage already exists.

However, this policy direction begs several questions. First, what kinds of production should be promoted? In other words, are there types of products which provide greater benefit for the region? Second, what are the obstacles to the production of such products? In particular, are there difficulties resulting from the region's structural problems? For example, a lack of sufficient labour and management skills in the Atlantic provinces have been identified in several studies (Savoie, 1992). Finally, what form should these policies take? For example, should they continue to rely on incentives to business, or

should they be more indirect, concentrating on the labour market? The primary focus of this thesis is the first two questions.

If we are concerned about the development of indigenous industry, then the Maritime food processing industry would be a logical choice. Farming and fishing have contributed significantly to the development of the Maritime provinces, and closely associated with agriculture and the fishery is secondary processing. Processors act as a gateway between producers and the eventual markets for their products. Therefore, how competitive these processors are can have a significant effect on these industries, and by implication the region's economy. It is not only important that processors are competitive, but, as noted above, what products they are competitive in. Are processors selling semi-processed products into commodity markets, or are they producing finished products which are sold to final demand markets? This is, in effect, the difference between low and higher value added production. It will be argued that greater value added to the region's resource production ultimately means greater output for the region, higher productivity and higher earned incomes. In an industry and a region which is dependent upon resource industries and a limited resource base, adding more value to its products is logically one of the most important sources of growth, and therefore a means for reducing regional disparities.

Adding more value, however, implies a transition in how firms operate, both in their processing and marketing. For example, a firm which processes strawberries into preserves and markets them under its own brand name, operates differently than one which simply cleans and packages strawberries for shipment. The former may have to invest more in plants, equipment, product research and development, and marketing. While the strawberry packager, by definition, does very little processing, and sells its inventory through one or two wholesalers. The higher value added firm has many more linkages with the local

economy and therefore relies to a greater degree on the region's ability to produce these inputs to remain competitive.

There are then three basic questions to be answered in this study:

1. What is the degree of higher value added production;
2. What are the differences between higher and lower value added firms; and
3. Are there constraints which which might affect the success of higher value added firms?

In general, secondary data sources were inadequate to address these questions, and therefore primary data was required. The primary data were collected using a mail survey of the population of food processors, and addresses several areas of interest: the firms' labour and capital inputs; quality and supply of the resource; production and marketing strategies followed by the firms'; the factors and strategies which processors rely on to be competitive; and the basic characteristics of the respondents in terms of employment, sales, geographic markets, and production costs.

In the chapters to follow the relevant literature will be summarized (Chapter 2), the methodology outlined (Chapter 3) and the data presented and commented on (Chapter 4). The literature review serves two purposes. First, by describing the character and status of the Maritime economy and the food processing sector, the concept of value added can be put into context. In particular, the important link between economic disparities, productivity, and value added will be made. Second, by reviewing several theories of regional growth and disparities, and Michael Porter's theory of competitive advantage, a theoretical basis can be established which informs both the construction of the questionnaire, and the analysis. The methodology will be outlined in Chapter 3 and will include the methods used for data collection, and its analysis. The results of the data analysis are summarized in Chapter 4. Here data on the degree of value added production, the main differences between low and

higher value added firms, and the constraints which possibly face higher value added firms are presented. Chapter 5, the concluding chapter, draws together the conclusions of the literature review and the analysis, and some comment is made on the policy implications of this analysis.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

One of the main objectives of this study is to describe the differences between low and high value added firms. It is hypothesized that higher value added firms require more sophisticated factor inputs, and follow more complicated strategies to establish and maintain their markets. The purpose of the literature review is to put these objectives into a wider context.

One of the underlying purposes of studying low and high value added food processors is the desire to see more value added to the region's resources. To understand this normative perspective entails describing the problems facing the Maritime economy in terms of its industrial structure, and the seemingly chronic disparities of income and unemployment compared to other regions of Canada. Many attempts have been made to explain regional disparities. However, it will be argued that in the context of this study, the link between value added, productivity and competitiveness bind what we see in the structure of the region's economy, and the observed disparities. Therefore, explanation lies in the root causes of productivity growth. This is an issue which is at the core of Michael Porter's theory of competitive advantage, which will be applied to the analysis of the region's food processing industry.

2.1 Defining the Terms

As noted above, competitiveness, productivity and value added will be an important part of the discussion. Porter (1990, 6) states emphatically that, "The only meaningful concept of competitiveness at the national level is national productivity". Rising per unit labour or capital productivity, Porter argues, is the root cause of national per capita income, and as such a high standard of living. Productivity is based on the ability of firms to raise product quality, add more desirable features, improve product technology or raise production efficiency (Porter, 1990, 6).

The focus of this thesis is adding more value to the region's food production. Value added is commonly defined as the value of a firm's output minus the value of the inputs that it purchases from other firms (Lipsey, *et al*, 1982, 579). At first glance, greater value added might easily be associated with higher productivity. After all, firms add value by raising product quality, adding more desirable features, improved product technology or raising production efficiency. In other words, increasing the value of the output, and/or reducing the costs of inputs. However, the link is tenuous. Productivity cannot be directly associated with an aggregate measure of value added which this definition implies. What might be considered a high value added firm may be utilizing labour and capital on a per unit basis very inefficiently.

However, there are circumstance when this link can be made. If the region in question has a surplus of labour, the higher value added firm is not bidding workers away from a more productive industry but out of unemployment. Secondly, if the value is being added to resources which would otherwise be shipped out of the region unprocessed, then this means more income for the region on an aggregate or per capita basis. This may be Mercantilistic in tone, but it is based on the ability of the region's firms to successfully

compete against outside firms to process local resources. There is, in effect, a safeguard against lower productivity associated with high value added; the firms could not compete. In practice, under these circumstances higher value added can be associated with increased competitiveness, productivity, and by implication higher per capita incomes. Do the Maritime provinces meet these criteria? Yes, the Maritime provinces have consistently had high unemployment rates, and much of the value added to the region's resources has occurred outside the Maritimes (APEC, 1987).

2.2 Importance of the Food Processing Sector Within the Maritime Economy

The Maritime economy is dominated by service industries which account for 69% (see Table 2.1) of the region's gross domestic product (GDP). Manufacturing makes up a much smaller proportion of the region's GDP, 13%, which is below the national level of 20%. Maritime manufacturing is dominated by resource processing industries, primarily forest, agriculture and fish products (APEC, 1987). Food and beverage industries account for 26% of the region's manufacturing output. This is a much higher proportion than the national rate of 12%.

A relatively small proportion of GDP is made up by food and beverage industries (Table 2.1). However, the importance of the food processing sector is greater than these figures would lead us to believe. Food processing provides a demand for the region's resources and determines the degree of value which will be added to them. In addition, food processors are primarily located in rural areas which have not benefited to the same degree from the high growth service sector which tends to have an urban locational bias (Coffey and McRae, 1989; and MacDonald, 1991).

Table 2.1: Selected Components of Gross Domestic Product (GDP), 1988

	Percent of GDP			Percent of Manufacturing Output
	Services	Manufacturing	Food and Beverage Industry	Food and Beverage Industry
Canada	63.34%	19.67%	2.46%	12.49%
P.E.I.*	70.45%	7.56%	3.94%	52.11%
Nova Scotia	72.54%	11.15%	3.22%	28.84%
New Brunswick	63.71%	16.34%	3.65%	22.31%
Maritimes	68.79%	13.04%	3.44%	26.37%

*The beverage industry is not included in the P.E.I. data because of confidentiality restrictions.
Source: Statistics Canada (1992)

Food processing then is an important part of the manufacturing sector in the Maritimes, which in turn is an important part of the region's economy. The challenges facing this sector and the Maritime economy as a whole will be addressed in the next section.

2.3 State of the Maritime Economy

The state of the Maritime economy and the challenges facing it is expressed most succinctly, maybe even brutally, by Charles McMillan in his report to the Council of Maritime Premiers. McMillan (1989, 17) notes that a large majority of firms in the region are dependent on local markets and often public support. Exports tend to come from a few products which are mostly unprocessed, and although governments have made constant efforts to find new investment, entrepreneurs and markets, there continues to be an increasing trade imbalance "...in high technology goods, in job-intensive services or in *value added product related to Maritime raw materials* [my emphasis]". To state this another way, over the past 30 or more years of trying to encourage greater manufacturing in the

Maritimes, the fact still remains that most manufactured products in the region are material inputs for further manufacture, often in distant locations. Much of the value added to the region's resources benefits other regions (APEC, 1987, 97).

There is a broader context to these failures. It is no longer possible for the region to rely simply on staples production for its prosperity. In many instances relative prices have fallen such that producers can no longer afford transportation costs incurred to get their products to market. In addition, often supplies have been found elsewhere, or better substitutes have been discovered (Economic Council of Canada, 1977, 23). More recently Porter (1991, 69) notes,

> "Competing solely on the basis of resource advantages in commodity industries makes nations [or regions] particularly vulnerable to subsidies and exogenous price and cost swings".

Therefore, the region's inability to successfully adjust from commodity to product production puts at risk its long term prosperity.

2.4 Measures of Regional Disparity

Notwithstanding the analysis above, there would be much less concern about adding more value to the region's resources if they could provide a standard of living similar to the national average. However, in terms of almost all measures of regional disparities the Maritime provinces continue to fall well behind the national average. For our purposes here measures relating to income and employment will be used.

There are two common measures of income disparities: personal income per capita; and earned income per capita. Earned income differs from personal income in that it does not include relative gains resulting from interregional transfers. There are several advantages which follow from this. First, earned income reflects better the the economic

activity generated within the region (Milne and Tucker, 1993). At times personal income in the Atlantic region has surpassed the region's GDP (Courchene, 1986). Personal income, therefore, may better reflect the region's standard of living, but not the underlying health of the economy. Secondly, raising earned incomes means less reliance on federal transfers which will come under increasing pressure in the 1990s because of the weight of federal debt (McMillan, 1989, 3).

Table 2.2 (below) summarizes earned income disparities between the three Maritime provinces and the Canadian average for selected years 1961 to 1988. Some progress has been made over the period, and this is particularly true of Prince Edward Island. However, the Maritimes provinces are still well below the national average, and progress has slowed, if not reversed, in the latter part of the 1980s.

Table 2.2: Earned income per capita of the three Maritime Provinces, selected years 1961-88: relationship to national average (Canada = 100)

	1961	1966	1971	1976	1981	1986	1988
Prince Edward Island	53.5	53.6	57.0	60.2	59.0	66.1	65.9
Nova Scotia	75.0	71.5	74.2	74.2	73.4	79.5	78.0
New Brunswick	64.1	65.1	68.1	69.0	64.9	70.2	70.1

Source: Savoie (1992)

Unemployment is another often used measure of regional disparity (c.f. APEC, 1989). There has been little convergence in national and regional rates of unemployment between 1961 and 1988 (see Table 2.3). There were periods between 1966 and 1988 when regional rates approached those of the nation, however, no clear downward trend has emerged. In fact, the disparity in the late 1980s appears to be worsening. Much of this widening differential is accounted for by lower rates in Ontario (APEC, 1989). Undoubtedly this gap has narrowed somewhat since the 1991-92 recession, which has affected Ontario more acutely than other regions of the country.

Table 2.3: Provincial unemployment, selected years 1961-88, relationship to national average (Canada = 100)

	1961	1966	1971	1976	1981	1986	1988
Prince Edward Island	-	-	-	135	150	141	167
Nova Scotia	114	138	113	134	134	138	131
New Brunswick	148	156	98	155	154	150	154

Source: Savoie (1992)

What are the implications of the observed structural problems and disparities of employment and income for the analysis? This is an economy which has relied on commodity production for its wealth, and has had difficulty making the transition from commodity to product production; from low to high value added. In this transition lies the heart of the matter.

2.4 Theories of Regional Growth and Disparities

To this point the terms competitiveness, productivity, and value added have been related to each other, and the difficulties faced by the Maritime economy have been defined. This section spells out the theoretical links between economic structure, and regional growth and disparities.

2.4.1 Staples Theory

Staples theory's emphasis on resource exploitation and export as an explanation for the historical development of the Canadian economy makes it particularly relevant to the subject at hand. At its core the theory, developed by Harold Innis (1933), assumes that

foreign demand for exports is the primary cause for a nation's or region's development (Bradfield, 1988, 30).

The benefits of resource development for the local economy depends on what this development entails. The development of a resource requires infrastructure and the more specific the infrastructure, the less likely other industries will develop. Roads built to ship agricultural commodities can be used for other goods as well, while an oil pipeline can only have one purpose. In addition, the more spread out the location of a staple, the more likely linkages and externalities will develop. A wider transportation system, and greater intraregional linkages will spread the benefits of development, and spread the risk of depending on export markets.

The capital requirements of resources development can also affect the region's development. Can physical capital be acquired domestically or will it be imported? Also, depending on how sophisticated the capital is skilled labour may be required. Can the region supply the labour, or will it again be imported? Moreover, capital intensive production processes may require little labour, resulting in a minimal impact on the local economy. Finally, the scale of production can determine the capital requirements of the industry, as well as determine whether there will be opportunities for small entrepreneurs, or for larger firms to develop. Smaller scale operations tend to provide opportunities for entrepreneurship, savings, investment, and skills to develop within the region. Larger scale operations are less inclined to encourage these developments (Bradfield, 1988, 31-33).

The path taken by an economy based on the exploitation of natural resources for export depends on the factors described above. Optimistically, the initial resource development will lead to the discovery of other natural resources which would in turn increase exports, immigration, incomes and consumption. This would provide the basis for the development of backward and forward linkages resulting in increased manufacturing,

and diversification (Bradfield, 1988, 33). There are, however, several reasons why such a pattern may not develop. If the resource is non-renewable its benefits may be short-lived. Even if the resource is renewable, foreign demand which initiated the development may fade, competition from other regions or countries might develop, or substitutes may be found for the resource (Bradfield, 1988). These are views similar to that of Porter (1991) and the Economic Council of Canada (1977) outlined above.

The introduction of staples theory at the beginning of this discussion serves several purposes. First, it provides a way to understand the historical development of fishing, and to a lesser degree farming, which until the 1960's was still oriented towards the Maritime market (APEC, 1987, 27). Secondly, the concept of forward and backward linkages is also introduced within the context of a resource industry. Backward linkages involve the substitution of imported goods associated with the production of the staple, while forward linkages, of interest here, entail processing the commodity further before it is sold for final consumption (Sitwell and Seifried, 1984, 13-14).

Staples theory alone, however, does not provide an adequate explanation of why or whether forward linkages will develop. Why trade in staples has and continues to occur is implicitly explained through absolute or comparative factor cost advantages. For example, ready access to a high grade ore can be a substantial cost advantage over competitors. In addition, further processing may occur because of cost advantages created by transportation savings resulting from processing at the source (Bradfield, 1988, 35). However, the use of comparative advantage to explain trade has been criticized because it assumes there are "...no economies of scale, technologies everywhere are identical, that products are undifferentiated, and the pool of national factors is fixed" (Porter, 1990, 12). This argument is particularly relevant for this project, because of its concern for the transition

from commodity to product production where factors like product differentiation are more important. Therefore, staples theory provides context, but limited potential for explanation.

2.4.2 Neoclassical Theory

If Staples theory represents an attempt to design a specific theory to explain the development of Canada, then Neoclassical theory and Core-Periphery theories (outlined in the next section) are examples of the adoption of more standard forms of economic explanation to regional problems.

Neoclassical theorists would argue that regional disparities are only short term problems which are overcome by the workings of market forces (Bradfield, 1988). For example, if region i has high wages and region j has low wages, there will be a tendency for capital and labour to move in reaction to these differences. Capital will move to j to take advantage of lower wage rates, bidding up wages in j and decreasing them in i. Workers will also move from j to i to take advantage of higher wages, lowering wages in i and raising them in j. Eventually the two regions will have equal wages. Within Canada one of the basic tenants espoused by neoclassical economists is that intergovernmental transfers have retarded the adjustment process, and made less developed provinces dependent upon federal transfers (c.f. Courchene, 1986a, and 1986b; and for a critique, Savoie, 1986a). This reflects the general tendency on the part of neoclassical economists to argue for the removal of impediments to the operation of market forces to reduce disparities (Bradfield, 1988). For example, Courchene (1970) sees migration as a potential adjustment mechanism to relieve regional wage disparities, but he argues that such an adjustment mechanism is hampered by intergovernmental transfers, total federal transfers, and unemployment insurance.[1]

Although neoclassical economists would argue that such adjustment mechanisms as migration and flows of capital would eliminate regional disparities, over a period of 50 or more years regional disparities still exist in Canada (Bradfield, 1988). There are two avenues to criticize the neoclassical point of view beyond the simple empirical evidence.

First, Bradfield (1988) effectively argues, *using a neoclassical framework*, that firms following profit maximizing behavior can lead to long-term disequilibrium.[2] Long-term wage disparities are due to, *inter alia*, differences in production techniques between regions, lack of labour mobility, differences in labour and resource quality, product price differentials, and differences in capital costs. Lower wages cannot be explained by industry structure or capital/labour ratios. Capital intensive industries will be located and locating in high wage, high advantage regions, while labour intensive industries will be attracted to lower wage regions. As a result,

> "We would observe two regions, relatively stable long run wage differentials between them, and a different mix of industries in the two regions. The high wage region would have a preponderance of capital intensive industries. The low wage region would have a preponderance of labour-intensive industries. But the low wages are not caused by labour intensive industries nor are the high wages caused by the capital-intensive industries" (Bradfield, 1988, 90-91).

Secondly, it is assumed in neoclassical theory that wages are flexible (as in the example above). Labour markets operate like any other market. However, it can be argued wages are rigid. This is not only because of government labour market policies (i.e. minimum wage legislation (Courchene, 1986b)), but also because the labour market is a social institution where there are real disincentives for the employer to lower wages and the unemployed to bid wages down (Solow, 1990). The migration of workers then may not bid wages down or the movement of capital out of a region force wages to fall.

There are implications which follows from this analysis. First, the text book neoclassical explanation is insufficient to explain regional disparities. Secondly, questions

about how to address regional disparities are effectively shifted from those of macroeconomic explanations (i.e. flows of labour and capital) to microeconomic. Note that Bradfield's analysis forces us to consider differences in, for example, production techniques or labour quality among regions. These are questions of productivity and its determinants, and are concerns which are similar to Porter's (1990) outlined below. Productivity is also the basis for the Economic Council of Canada's (1977) explanation of regional disparities. However, arguing that productivity is at the root of regional disparities does not explain why there are productivity differences.

This is not to say that the impact of macroeconomic policy should be ignored. McMillan (1989), for example, notes the negative impact of federal fiscal and monetary policies have had on the Maritime provinces, and Porter (1990) also notes the effect of macro economic forces on the competitive advantage of a nation.

2.4.3 Core-periphery Theory

Apart from Staples and Neoclassical theories of regional growth and disparity, a third set of theories, namely Core-periphery, can be identified. Unlike Neoclassical theory which indicates the market will eventually produce an even distribution of wealth, Core-periphery theories are largely based on the assumption that there is an exploitive relationship between core and peripheral regions, which leads to an uneven distribution of wealth (Bradfield, 1988). Core-periphery theories explicitly recognize that economic growth is polarized and attempt to explain why. The influence of the core on the periphery can take the form of both negative 'backwash' and positive 'spread effects' (Myrdal, 1957). Initially backwash effects will be discussed, followed by a discussion of spread effects.

Most Neo-Marxists argue that the core will use its wealth to invest in the periphery, but the profits (surplus value) from such developments will accumulate in the core. In effect, the core is exploiting the periphery (Bradfield, 1988). The role of capital as a cause of regional disparities does not end here. The constant pursuit of profits and the resulting inherent instability of the capitalist system has spatial implications. The decline of staples industries, and/or the restructuring of industry, will result in long-term structural unemployment because of the relative immobility of labour compared to capital (Johnston, 1986). Veltmeyer (1990, 96) makes a similar point in his analysis of the effect of capital restructuring on Atlantic Canada. He argues that the tendency for capital to eliminate the region's old production capacity during times of crisis is an explanation for the long-term trend towards lower per capita incomes and higher unemployment rates. Not only can capital be drained from regions, but also labour. Skilled labour will be taken from poorer regions when the economy is growing and will flow back when the economy slows, and therefore, places the burden on the poor region (Savoie, 1986a). Therefore, capitalism itself results in the extraction of surplus value from peripheral regions, and the inherent incentives within the capitalist system leads to further uneven development.

As noted above, in addition to backwash effects there are also spread effects which result from the core's development. The core provides both a market for the periphery, and of particular concern here investment capital. Although the initial development of the core may produce limited spread effects (Myrdal, 1957), Scott and Storper (1986) argue that in the long-term increasing demand will encourage the fragmentation of the production processes found in the core. In other words, when the input-output structure of production becomes simpler or scale and standardization of production are increasing, there is a tendency for production to be diffused to peripheral regions (Scott and Storper, 1986). Markusen's (1987) Profit Cycle Theory provides a similar conclusion. Initially a new

industry will experience high growth rates, above normal profits, high levels of innovation, and strong agglomeration economies. However, as the industry matures profits begin to decline and products become increasingly standardized. The influence of agglomeration economies become weaker, and there is a growing incentive to disperse production away from the growth centre to take advantage of lower production costs in the periphery.

There are in effect two types of regional growth: that which is based on the birth of a new industry; and growth resulting from the relocation of more established industries from from the core to the periphery (Markusen, 1987). Typically, in the case of the former we can expect long-term economic growth, while the latter type of growth may be only short lived. For example, industries may relocate due to lower labour costs, but the influx of industry will tend to force up labour costs, and therefore, reduce the attractiveness of the region. Secondly, competition may cause the industry to move again to even lower cost regions (Markusen, 1987).

As noted in earlier sections, the reliance of the Maritimes on resource development is a precarious long-term strategy. Similarly relying on lower production costs to attract industry may be equally as precarious. This is a conclusion which will be revisited again in the summary of Porter's theory to follow. What is still unclear are the factors which lead to the long-term economic growth of a region. Perroux refers to the propulsive effects of technology and innovation (Higgins, 1988), Myrdal (1957) speaks of the influence of the inflow of capital and labour to a region, and Scott and Storper (1986) argue demand is an important influence on the development of an industrial complex. Implicit in all these arguments is the question, what makes an industry or a region competitive? What factors lead to the long-term sustained growth of a region? The next section attempts to answer these questions.

2.5 Competitive Advantage - Michael Porter

It is possible to draw from the analysis above the idea that regional disparities are ultimately based on differences in regional levels of productivity; productivity which can be linked to value added and by definition to competitiveness. However, the root causes of productivity growth have not been explained. If, as the Economic Council of Canada argues (1977), regional productivity is the result of, *inter alia*, the quality of the labour force, adoption of new technology, capital investment, transportation costs, the question then becomes what creates these advantages. Michael Porter provides a theoretical framework to answer this.

What will be briefly outlined below are the vital features of Porter's theory of competitive advantage. It should be made explicit from the start that the objective is to use his theory to inform the design of the study and its analysis, but not to follow every nuance. Porter's theory is intended to cover a wide spectrum of industries and nations. The focus of this thesis is on a single industry in a single region. Therefore, some aspects of Porter's theory will be emphasized, and others will receive less attention depending on their relevance to the objectives of this thesis.

Porter discusses competitiveness at the level of the firm, and that of the nation. The discussion of the firm revolves around competitive strategies and what the firm requires to effectively pursue them. At the level of the nation the determinants of the competitive success of industries are discussed. The quality of these determinants available in a nation, and the ability of firms to take advantages of them, will determine whether an industry will achieve international success.

2.5.1 Competitiveness at the Level of the Firm

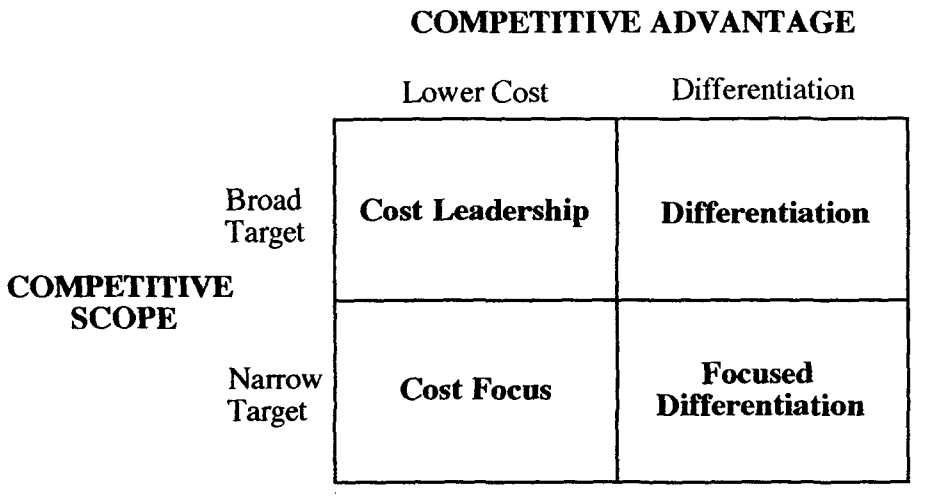
Porter argues that there are two potential ways firms can compete for markets: lower costs; and differentiated products that command premium prices. In other words,

> "To gain competitive advantage over its rivals, a firm must either provide comparable buyer value, but perform activities more efficiently than its competitors (lower cost), or perform activities in a unique way that creates greater buyer value and commands a premium price (differentiation)" (Porter, 1990, 40).

Firms can also choose their degree of competitive scope. Scope is defined as the breadth of a firm's target within an industry in terms of its products, buyers, distribution channels and geographic markets. For example, IBM might be considered a broad scope competitor because of its wide range of computer hardware which covers most of the market. Sun Microsystems, on the other hand, would have a narrow focus, workstations.

Competitive advantage and competitive scope can be combined to define four generic strategies (see Figure 2.1). The point here is not to describe the attributes of these strategies in detail, but to outline some of their implications. First, firms within an industry have a choice of how they will compete and what markets they will compete for. There is no one predetermined superior strategy. Secondly, the main strategic errors which firms make is following several instead of one strategy. It is very difficult to be a cost leader and produce highly differentiated products, since higher costs are inherent when producing differentiated products. Attempting more than one strategy means the firm cannot excel in one (Porter 1990, 40).

Figure 2.1: Generic Strategies



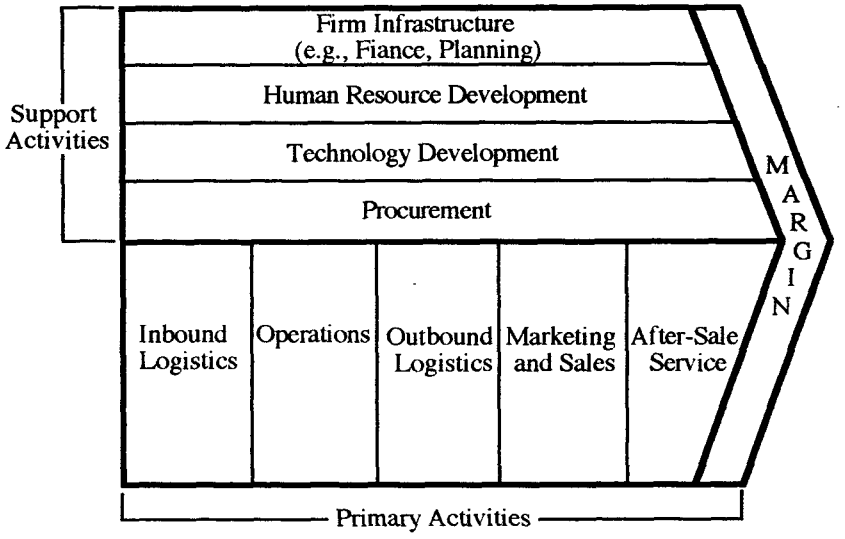
Source: Porter (1990)

Firms compete for markets by either producing comparable products at a lower price or by creating unique products for which they charge a premium price. The value created for the customer depends on the 'value chain' (see Figure 2.2). Each link in the chain creates more value for customers. The value chain contradicts the traditional view that value added is only created at the processing (operations) stage. Outbound logistics, marketing and sales, and after-sales service can all act to raise the value added to the product. Inbound logistics can can add value by improving the quality of inputs, and increase value added as a proportion of revenue by reducing material input and storage costs.

Depending on the industry and the strategy followed by the firm some parts of the chain will be emphasized more than others. A firm competing in terms of price will want to reduce costs throughout the system. On the other hand, a firm which produces differentiated products may place more emphasis on technology development or after sales

service. In addition to emphasizing parts of the chain, how the firm manages the whole system can have a significant effect on its competitiveness. For example, a firm competing in terms of lower costs may find it cheaper to invest more in quality control at the operations stage, because of savings in after-sales service. Simply cutting costs across all part of the chain may be counter-productive.

Figure 2.2: The Value Chain



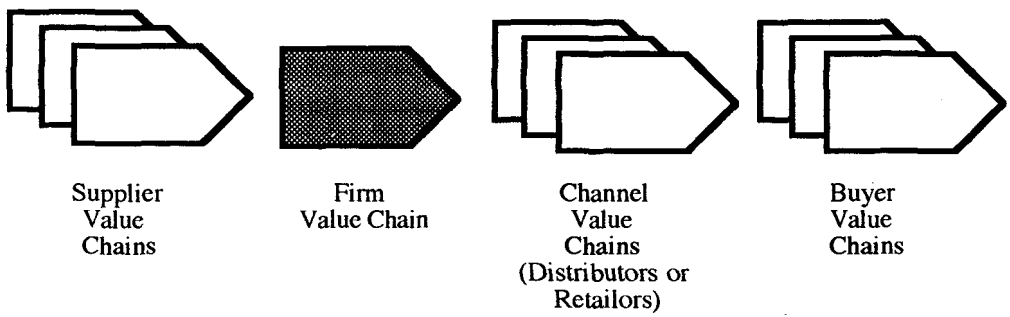
Source: Porter (1990)

The firm's value chain is in turn a part of a value system (see Figure 2.3). This system consists of supplier chains, channel value chains (distributor, retails), and buyer value chains. Porter argues that like the firm's value chain, how effectively a firm coordinates its activities with the system affects its competitiveness.

> "The ability of a nation's firms to exploit linkages with home-based suppliers and customers will prove important to explaining the nation's competitive position within an industry" (Porter, 1990, 43).

The link between the firm and the nation's competitive position will be explored in the next section.

Figure 2.3: The Value System



Source: Porter (1990)

Creating competitive advantage is based on how innovatively firms manage their value chain and their relationship with the value system. As Porter states,

> "Firms create competitive advantage by perceiving or discovering new and better ways to compete in an industry and bringing them to market, which is ultimately an act of innovation" (Porter, 1990, 45).

Innovation can be associated with product changes, process changes, new approaches to marketing, new forms of distribution, and new forms of competitive scope.

As important as creating competitive advantage, is sustaining advantage. The sustainability of advantages relies on three conditions. The first condition is the source of advantage. Porter argues that there is a hierarchy of sources of competitive advantage: lower order; and higher order. Lower order advantages centre on low labour costs, cheap raw materials or economies of scale. These are often easily overcome by competitors. Higher order advantages tend to be longer lasting. They include: proprietary process technology; product differentiation (unique products and services); brand name reputation

built on long term marketing efforts; sustained innovation in physical facilities; and often risky R&D and marketing.

Cost advantages associated with lower order advantages are easily overcome by finding any new source of lower cost, even if it is less sophisticated. For example, a firm producing an undifferentiated product with a large scale plant, can be placed at a disadvantage by smaller producers with cheap labour. However, advantages created through differentiation must be matched to be exceeded. Cheap labour or raw materials cannot nullify the advantage created by developing a unique product to serve a specialized segment of the market. The only way to react is to match or exceed those unique product qualities.

The pursuit of higher order advantages has implications for firm operations. Firms tend to require more advanced skills and capabilities (i.e. specialized and highly trained individuals or internal technical capabilities). In addition, higher order advantages depend on sustained and cumulative investment in: physical facilities; specialized learning; research and development; and/or marketing.

The second condition for sustainability is the number of distinct sources of advantage a firm relies upon. One or two sources of advantage are much more easily overcome than many.

This leads us to the third, which is the constant improvement and upgrading of advantages. Porter argues that no matter what the advantage it can be eventually overcome by competitors if it is not constantly improved and upgraded.

Whether a firm relies on low or high order advantage, the ability of the firm to use them effectively depends in large part on the economic environment in which the firm is operating. The strength of the value system can then play a large role in its success in national and international markets; this will be the focus of the next section.

2.5.2 Role of the Nation/Region - Determinants of National Advantage

There is obviously a regional focus to this project, and one of the underlying questions is the influence the regional economy has on the ability of its firms to compete. Porter, however, develops his theory at the scale of the nation. Any conflict between the two scales is more apparent than real. Porter argues that his theory is readily applicable to political and geographic units smaller than the nation (1990, 29). A geographer might argue that his theory is most applicable at smaller scales. Regions are often defined in terms of functions and interrelationships which may have more to do with Porter's ideas than an arbitrarily defined nation. This is particularly true of Canada, where there are clearly different regional economies which are in part recognized in our federal system of government. For consistency with Porter's terminology, the term nation will be maintained, but to a large degree nation can be read as region.

Porter (1990, 70) argues that there are four determinants of national competitive advantage:

1. *Factor conditions.* The nation's position in factors of production, such as skilled labour or infrastructure, necessary to compete in a given industry.
2. *Demand conditions.* The nature of home demand for the industry's product or service.
3. *Related and supporting industries.* The presence or absence in the nation of supplier industries and related industries that are internationally competitive.
4. *Firm strategy, structure, and rivalry.* The conditions in the nation governing how companies are created, organized, and managed, and the nature of domestic rivalry.

Factor Conditions

Porter defines factors of production as: human resources; physical resources; knowledge resources; capital resources; and infrastructure. Competitive advantage is gained if a nation's firms have access to low cost or unique, high quality factors. The simple existence of factors does not necessarily lead to competitive success. Whether they are utilized and how efficiently and effectively are they deployed is important. Much of this depends on the other determinants of competitive advantage to be describe in more detail below.

Not all factors are created equal. Porter uses two classifications: basic and advanced factors; and generalized and specialized factors. Basic factors are inherited or take relatively little effort to create (i.e. soil quality, climate). They also tend to be most important for extractive or agriculture based industry. On the other hand, advanced factors (i.e. highly skilled employees) are much more difficult to develop, as they are created through sustained investments in human and physical capital. However, they are necessary for the development of higher order competitive advantage. Generalized factors can be used by many industries, and include such things as highway infrastructure, capital, and motivated, educated employees. Specialized factors, on the other hand, tend to be important for just one or two industries. Generalized factors, like basic, are sufficient for lower order competitive strategies, however specialized factors are often required for higher order advantage.

There is some connection here with the Staples theory discussion. For staples development basic factors are the primary cause and the potential benefits of staples development depend on the degree to which the development depends on generalized rather than specialized factors (i.e building roads as opposed to building a pipeline). Generalized factors are more likely to result in further development. Therefore, if an economy initially

develops based on staples, the factors which are most important for its development are not those which are likely to support higher order competitive advantages.

Demand Conditions

There are three broad attributes of demand which contribute to competitive advantage: the composition of home demand; size and patterns of growth of home demand; and the mechanisms by which a nation's home demand is transmitted to foreign markets. Home demand is much more important for the development of local firms, because it is much easier for them to understand and respond to than buyers in distant foreign markets.

Home demand is most effective as a determinant of competitive advantage when it has one or more of the following characteristics. If the home demand for an industry emphasizes market segments which are more global than others. This makes it easier for home industries to meet the needs of international markets. In addition, if the home demand is characterized by sophisticated and demanding buyers there will be greater pressure for the firms to meet higher standards. The above two characteristics of home demand are particularly effective if home buyer needs anticipate those of other nations, and so provide domestic firms with a head start.

The size of home demand and its rate of growth can also affect the international competitiveness of firms. If the industry is characterized by large scale economies, high R&D expenditure, large leaps in technology, or high levels of uncertainty, a large home market can provide a competitive advantages. However, if home demand is not similar to international demand these advantages can be nullified. In addition to size, if home demand is growing quickly competitive advantage may be gained by the quick introduction of new technology, and investment in large more efficient facilities. Finally, if the home market is quickly saturated, there is more incentive for local firms to innovate and upgrade their

competitive position to maintain their market share. Also, there is greater incentive for the industry's firms to seek foreign markets.

The third characteristic of domestic demand is its degree of internationalization. If foreign firms have operations in the home nation, or foreign nationals have studied or worked in the home market, they can pull the nation's products and services abroad.

Related and Supporting Industries

The presence of internationally competitive related and supporting industries also provides advantages to the nation's industries. Successful supporting industries can give easy access to more cost-effective inputs, easier coordination of activities with suppliers. In addition, close contact between suppliers and buyers allows greater transfers of information, and thereby, enhances the process of innovation and upgrading for both the supplier and the upstream industry. Buyers get to know the most advanced products of the suppliers, and suppliers are better able to see the needs of their customers. Related industries can be defined as those which coordinate or share activities in the value system when competing, or have complementary products. Like supporting industries, related industries provide for information flow and technological interchange. If related industries have been internationally successful, it can also provide a pull for similar industries, and particularly for ones which are technically interdependent. The success of American computer companies abroad acted as a pull effect on related software and hardware producers.

Firm Strategy, Structure and Rivalry

Porter argues that the strategy and structure of an industry depends to a large degree on national circumstances. For example, Italian firms tend to be small and centred around the family or extended family. As a result, Italian firms tend to be most successful in

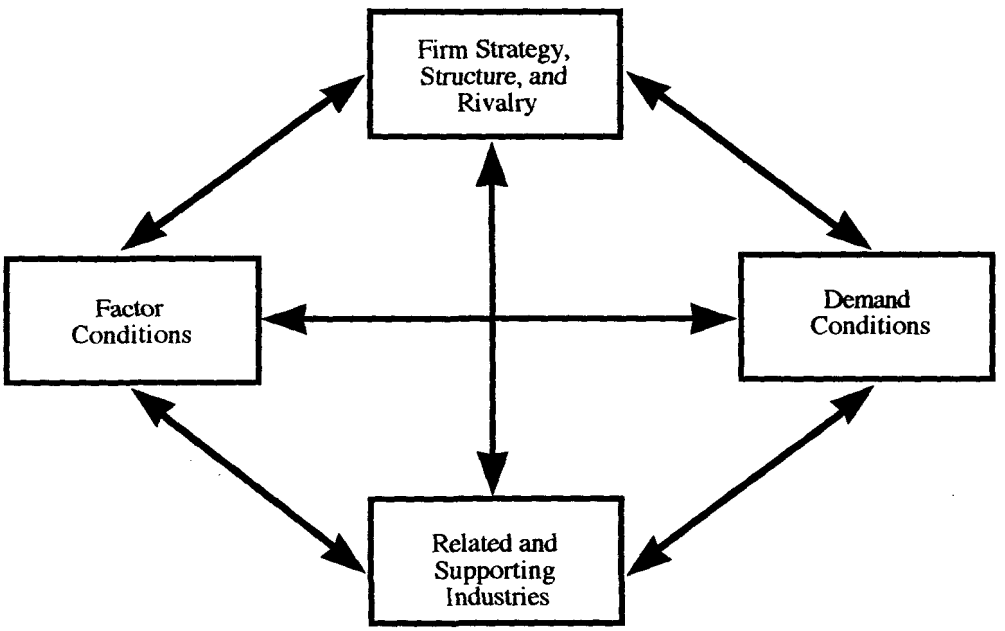
fragmented industries with modest economies of scale, or economies of scale which can be overcome by coordination among firms. German firms tend to have a strong hierarchy with managers who have technical skills at the top. These firms are inclined to be most successful in industries which produce technically complicated products.

Domestic rivalry also plays a strong role in determining which firms will achieve competitive advantage. Domestic rivalry, more effectively than competition from foreign firms, pushes the competitors to innovate and upgrade their competitive advantage. Domestic firms have access to the same advantages (i.e. low labour costs), forcing them to seek other competitive advantages, often higher order, to maintain their position. This competition makes it easier for domestic firms to compete in international markets, and often acts as a push factor.

2.5.3 The National Diamond

These four overall determinants of competitive advantage are linked in what Porter refers to as the national 'diamond' (see Figure 2.4). For example, if a nation has a large market for a product and there is a similar international demand, the country may still not be successful in international markets if there is little domestic rivalry. The domestic firms may be content with the large national market and uninterested in global markets. As a second example, a new innovative product which is initially competitive in international markets, may lose market share over time because of a lack of competitive related and supporting industries to support continued innovation. International competitors are able to copy the products and overcome the initial competitive advantage of the industry.

Figure 2.4: The National/Regional Diamond - Determinants of Competitive Advantage



Source: Porter (1990)

This 'diamond' is not static, but reflects the dynamic nature of the economy itself. For example, sophisticated and demanding buyer may spur firms to innovate and upgrade their competitive advantage. These activities may lead to closer relations with supporting and related industries, pushing them to innovate more to keep up with their customer demands. More sophisticated operations may create greater demand for skilled and highly skilled employees, and so greater investment in educational institutions. Although all the determinants affect each other, Porter (1990, 131) argues,

> "Two elements - domestic rivalry and geographic industry concentration - have especially great power to transform the 'diamond' into a system, domestic rivalry because it promotes upgrading of the entire nation 'diamond,' and geographic concentration because it elevates and magnifies the interactions within the 'diamond.'"

There are several benefits of rivalry which Porter identifies: stimulating new rivals through spin-offs; creating and attracting factors; upgrading and expanding home demand;

encouraging and upgrading related and supporting industries; and channeling government policy in more effective directions.

Porter's conception of the effects of geographic industry concentration is a step beyond the traditional view. Geographic concentration (agglomeration) allows firms to take advantage of urbanization and localization economies. By locating in urban areas industries benefit from, for example, developed infrastructure and abundant skilled labour. Similarly, if the same or closely related industries locate in the same region they can take advantage of a labour force, and suppliers which are oriented towards that particular industry (Yeates and Garner, 1976). Porter argues that beyond these benefits geographic proximity also intensifies firm rivalry which, as just noted, can transform the national 'diamond' into a system.

2.6 Competitive Advantage and the Food Processing Industry

The food processing industry, like any industry, has unique characteristics which should be taken into account. Outlined below is the overall competitive characteristics of food processors, as well as some of the specific characteristics of the Maritime industry. Where possible the literature will be linked with Porter's theory of competitive advantage.

Demand

One of the most important underlying trends affecting food processing is changes in consumer demand. Demand for food is most affected by rising disposable incomes, falling family size, and the growing participation of women in the workforce. These trends have and continue to shift demand towards higher quality, more convenient foods (Connor, *et al*, 1985; and Marion, 1986). For example, foods with high income elasticities, like frozen fruits and vegetables, alcoholic beverages, and food-away-from-home (time saving

frozen foods) have increased their market share. Unprocessed food like shellfish or veal, also have high income elasticities. Products with negative income elasticities such as lunch meats or canned fruits and vegetables have seen declining demand (Connor, *et al*, 1985). In general, processed foods have increased in price at a faster rate than fresh or relatively unprocessed foods (Connor, *et al*, 1985). In short, there has been a shift toward higher value added, processed, high quality foods, and a shift away from lower value added, unprocessed products.

Supply

In addition to demand conditions, supply conditions can also effect the food processing industry. Compared to other manufactures food processors are more materials, capital and advertising intensive (Marion, 1986, 208). The raw material supply can be unstable. Variation in climate can effect farm yields year over year, and in the fishery environmental conditions and the level of fishing effort can have profound effects on the supply. This can be manifested in the long term rise or decline of stocks, or in the degree of seasonality of production. The unreliability of the resource can potentially have an effect on the degree of capital investment. Capital investment must be financed regardless of whether the plant is in operation of not. As a result, large capital investment may be discouraged.

Market Structure

Another important consideration is the link between market structure and structural change. Connor, et al (1985, 1138) notes that,

> "In the framework of industrial-organization economics, demand and supply conditions are the two principle determinants of market structure. The paradigm further posits a causal connection between market structure, the business strategies open to firms, and their financial performance".

There are three characteristics of market structure: sales concentration, degree of product differentiation, and ease of entry (Connor, et al, 1985).

A high degree of sales concentration can lead to price leadership, or price coordination (collusion). In short, market dominance leads to coordination among sellers to "...establish a peaceful, stable market environment" (Connor, et al, 1985, 1139). From a competitive advantage perspective such a market environment would not be conducive to firm rivalry and by implication continued innovation. Leading firms in the long run would be vulnerable to outside competition (Porter, 1990).

Product differentiation is a particularly important aspect of market structure which has substantial implications for the operations of the firms. Firm differentiate their products from competitors through advertising, brand names, and product and packaging characteristics. These are, in effect, higher order competitive advantages which require consistent investment in marketing and product development for them to be established and maintained.

Following from this, product differentiation can be considered one of the most important barriers to entry (Connor, et al, 1985). Competing firms have to match or better the attributes of the product and the brand reputation. This is more difficult than bettering price advantages of undifferentiated products (Connor, 1985; and Porter 1990). Established firms are then able to charge premium prices for their products resulting in typically higher profits (Marion, 1986), and higher value added.

In addition to product differentiation, Marion (1986, 218) identifies four other barriers to entry: absolute cost advantage (i.e. lower resource input costs); capital costs associated with the size of investment for efficient entry; scale economies either in production or in advertising; and strategic behavior on the part of incumbent firms. In the case of strategic behavior, incumbent firms may constantly add new products, and thereby

fill any product niches which might be pursued by new competitors. With the possible exception of strategic behavior, these advantages compared to product differentiation tend to be lower order and are more easily overcome in the long run.

How processors sell their production is also dictated by their degree of product differentiation. Highly differentiated products, usually brand name products, are sold to retail stores, while products sold to other processors, food services, and unbranded retail products tend to be less differentiated. Producer inputs are the least differentiated and those sold as unbranded retail are closest to branded retail levels of differentiation. For less differentiated products buyers tend to be more knowledgeable (Connor et al, 1985) and there is greater price competition (assuming competitive markets). These products, therefore, would tend not to be as profitable and possibly are lower value added.

Innovation

There is a tendency for food processors to under spend on R&D and for R&D expenditures to be dominated by the largest firms (Marion, 1986). Most innovation comes from suppliers (Connor, 1988; and Marion, 1986), and therefore, there is an important link between supporting, and possibly related industry, and innovation in the food processing sector. It is also the case that smaller firms tend to be a source of innovation and inventive activity (Marion, 1986). Therefore, a lack of scale does not prevent innovation.

2.7 Conclusions

At a very basic level two conclusions can be drawn from the literature review. First, value added can be logically associated with productivity, and higher productivity is the only meaningful outcome of the pursuit of industrial competitiveness. Second, food processing is an important part of the Maritime economy, and therefore, an important area of study.

It has also been established that the Maritime economy has found it very difficult to make the transition from commodity to product production, and therefore from low to high value added production. This lack of success puts the long term prosperity of the region into question because of the vulnerability of commodity production to outside competition and the development of substitutes.

The region also finds itself with disparities in income and employment compared to the rest of Canada. Theoretically these disparities may be the result from the region's inability to take full advantage of its staples development (i.e. development of forward linkages), barriers to the operation of the market, or the nature of the market (capitalism) itself. Regardless of the validity of any of these theories, although there is a grain of truth in all of them, at their root regional disparities are the result of differences in productivity. The explanation of productivity differences is found in such factors as, *inter alia*, natural endowments, labour quality, technology, and advanced infrastructure. Porter's theory competitive advantage provides a basis to understand the causes of productivity growth. Productivity is rooted in the how firms manage the value chain and the value system, and the dynamics of the national diamond.

The chapter is concluded by summarizing the relevant competitive characteristics of the food processing industry. This is an industry which has experienced a shift in demand towards differentiated products. In addition, product differentiation is also one of the main

forms of non-price competition used by food processors and is a strategy which relies in large part on higher order competitive advantages. Firms which produce differentiated products emphasize different parts of the value chain and the value system to establish and maintain their competitiveness. They add value differently than firms which produce undifferentiated, often lower value added, products. In these differences may lie the explanation of why the Maritime economy has had difficulty adding value to its resources.

CHAPTER 3

METHODOLOGY

3.0 Introduction

The methodologies used in this thesis reflect the two distinct phases of this work: data collection, and data analysis. Therefore, this chapter will be divided between the description of the survey instrument and its implementation, and the techniques used in analyzing the resulting data. This section is primarily intended to provide a link between the objectives of this project and the data required to meet them, and to establish a clear understanding of how that data will be analyzed.

3.1 Survey Instrument

In the early stages of this project it was determined that secondary data sources were insufficient to address the research problem. Therefore, primary data collection was the only option. There are two ways to collect firm level data: through surveys (telephone or mail), and/or face to face interviews. In general, surveys provide the possibility of covering a geographically disperse section of the population at a relatively minimal cost in terms of time and expense (Erdos, 1970; and Moser and Kalton, 1971), and allow for larger sample sizes. Face to face interviews do not afford large, geographically dispersed samples, but are better suited to answer more complicated questions (Mosers and Kalton, 1971; and Babbie, 1979). Ideally, a study would include both methodologies, with an initial mail survey covering the population and then a small selected sample for face to face interviews. In the context of this study, both time and financial constraints made this impossible.

Since so little was known about the population of the food processing industry, particularly about higher value added production and its determinants, it was decided a broad sample of the population would be most useful. This would potentially provide a stronger basis for comment on the population as a whole, and the large sample size would allow for better statistical analysis.

The survey options then were telephone or mail surveys. For two reasons the mail survey format was the best option. First, although telephone surveys usually provide a higher response rate, they leave little time for thoughtful replies. Mail surveys can be completed at the respondents leisure, and this was important for several of the survey questions. Secondly, mail surveys are usually less expensive than telephone surveys and require less time.

3.1.1 Survey Construction

There are two related questions to be answered when constructing a survey: how long should the survey be, and what type of questions will be included? The decision about questionnaire length, and type of question in large part revolves around the conflicting objectives of a high response rate and gathering enough data to address the research question.

Survey Length

There is little consensus in the literature of the appropriate length for a survey. For example, Dillman (1983) notes that 8 to 12 page surveys can obtain response rates of up to 90%, while Erdos (1970) argues that 4 to 6 pages should be the maximum. Low-response rates are a concern for two reasons. First, the lower the response rate the less likely the

sample reflects the population. In other words, there may be a self selection bias. Secondly, if the population is relatively small, which is true in this case, a low response rate may make statistical tests difficult or impossible to use (i.e. if $n < 30$). However, designing an incomplete survey because of the fear of a low response rate is self-defeating. Therefore, the guiding principle was to address the objectives of the study, but every effort was made during the questionnaires construction and implementation to enhance the response rate.

Types of Survey Questions

The type of questions included in the survey can both affect the type of data available and the response rate. There are two general types of questions: closed, and open ended. For closed questions the respondents are asked to choose from a range of answers, while open ended questions allow the respondent to formulate their own answers. Open ended questions are best when the researcher is not sure of the answers respondents will give, but often results in lower response rates than closed questions which are less taxing on the respondent. Closed questions, however, can added excessive length (Erdos, 1970). In this case a closed question format was chosen. In most instances the responses could be anticipated, and this type of question lends itself to easier data entry, analysis and potentially a higher response rate.

There are three potential types of closed questions which can be included in the survey. The simplest is asking firms to limit their response to a category (nominal). For example, asking whether they invested in new plants over the past 5 years (yes or no). The other types involve either rating or ranking (ordinal). Ranking was not chosen for two reasons: first, it can force respondents to order categories they might not otherwise; and secondly, ranking does not give any idea of relative importance. For example, if a respondent were asked to rank the importance of competitive strategies there may be several

which the firm would not even consider using, and there may be two which are of equal importance. This would be frustrating for the respondent and a considerable amount of information would be lost. On the other hand, rating systems (i.e. Likert scales) do not force the respondents to make such judgements and the relative importance of options can be considered. Based on these arguments the rating format was chosen.

3.1.2 Survey Content

There were six themes which the questionnaire (see Appendix "A") addressed:

1. *capital and labour inputs*;
2. *quality and supply of the resource*;
3. *growth and sources of demand*;
4. *indicators of value added*;
5. *factors and strategies which processors rely upon to be competitive*; and
6. *basic characteristics of the respondents in terms of employment, sales, geographic markets, and production costs.*

Each theme outlined below is associated with a section of the questionnaire and these sections are noted in brackets.

These themes reflect the broad goals of this thesis. First among these is to identify firms which are producing higher value added products. Once the firms have been classified then they can be compared in terms of their capital and labour requirements, growth rates, and the factors and strategies they rely upon to be competitive in the markets they have chosen. When this has been established it is possible to comment on why the region's industries have persistently had difficulty making the transition from low to high value added production.

1. *Firm capital and labour inputs (Section A)*[3]

In general, the purpose of this section was to determine what the firms were spending on, and what type of workers in terms of job classification and skill levels they were employing. The firms were asked whether they had invested or spent in such areas as new plants or product promotion (marketing). In addition, they were asked whether governments had assisted them, and how willing private capital was to finance these activities. Similarly, the respondents were asked whether they employed persons in, for example, product R&D or quality control, or contracted these functions to other firms or organizations based in the Maritimes. The respondents were requested to rate the importance of unskilled, skilled and highly skilled employees to their business success. Finally, the firms were asked to report whether they had problems finding and keeping these employees, and what were the causes of such problems.

2. *Quality and supply of the resource (Section B)*

This section was intended to determine the effect of the resource on the firms' operations. The respondents were asked their opinion on whether the reliability of supply or the seasonal nature of the resource had an effect on their spending on capital (fixed costs). An unreliable or seasonal resource can lead to extended plant shutdowns, however, during these periods payments to capital still have to be made and this may discourage capital investment. In addition, the processors were asked to rate the quality of the resource, the effect of quality on the price they receive, and whether quality has affected the products they produce.

3. *Growth and Sources of Demand (Section C)*

The purpose of this section was to determine the growth rates of the respondents, as well as the causes of growth. The sources of demand for the firms' products was also addressed.

4. *Indictors of Value Added (Section D)*

One of the most important parts of designing the questionnaire was defining the indicators of value added. It was decided early on that actually measuring the level of value added was impractical. Calculating value added would require the respondent to spend a considerable amount of time collecting financial data, and therefore, potentially reducing the response rate. In addition, many firms are privately owned and are often very secretive, and so would not be forthcoming with such detailed financial information. Finally, the only practical way to provide such information would be as an aggregate measure of value added for the whole firm. However, many firms may be producing some products which are high value added and some which are low value added. This information could be lost in an aggregate measure. Therefore, an alternative means of measurement, or more accurately an indicator of value added, had to be defined.

Porter's concept of the value chain provides a conceptual basis for defining an indicator or indicators. Value is not only added at the processing stage (operations), but at all the other steps along the value chain. This implies that there are two ways of adding value to inputs: creating value through the physical transformation of inputs; and by such functions as inbound and outbound logistics, marketing and sales, and after-sales service. For example, a firm which makes frozen fish dinners can sell their product to institutions, or as a brand name through retail stores. The processor will be able to sell the dinner at a higher price to the retail store than the institutional buyer. Processing has nothing to do

with the greater value added. Similarly, if a fish processor can guarantee it can cut and transport high quality fresh fillets to market, it can add much more value than if it made that fish into a breaded fish stick. The price is based on quality, not processing, and the firms' ability to ensure quality has much to do with inbound logistics, good storage, and outbound logistics. What links both of these examples is the fact that value is being added, at least in part, through non-price price marketing strategies: brand name, and quality. Therefore, in addition to processing, firms can add value through non-price marketing strategies; what Porter would refer to as product differentiation. In short, this means being able to charge premium prices.

Figure 3.1 (below) illustrates the relationship between processing, marketing strategies, and value added. Low value added is associated with low processing and price competition. Higher value added is likely to result from high processing and/or non-price competition. Each firm is asked what percentage of their production is low processed, and what percentage is marketed through a price strategy. A high percentage of low processing does not mean the firms' products are low value added, since they may be marketed using a non-price strategy. Similarly, following a price competition strategy does not necessarily indicate lower value added if the firm is following a high processing strategy. Therefore, conceptually both indicators of value added are needed.

Figure 3.1: Indicators of Value Added

Value Added	Strategy	Characteristics
Low Value Added	Low Processing	mimimum amount of processing to prevent spoilage
	Price Competition	primary selling point of the product is price
High Value Added	High Processing	process raw foods into products which are seen by consumers as different from the ingredient(s)
	Non-Price Competition	marketing products, often to particular market segments, which are or seem to be different from the competition

(5) *The factors and strategies which processors relied on to be competitive (Section E)*

In this section the firms were asked to rate the importance of several factors which might affect their competitiveness, as well as strategies the firms might follow if faced with increased competition or increased costs accessing markets. The factors which affect competitiveness generally follow Porter's (1990) definition of factors of production as human resources, physical resources, knowledge resources, and capital resources. These factors can also be classified as either basic or advanced. Both the competitive factors and strategies potentially provide an understanding of the different ways low and higher value added firms create and maintain their competitiveness.

(6) *The basic characteristics of the firms (Section F)*

The respondents are asked about the size of their firms in terms of sales and employment, the extent of geographic markets, and the percentage of operating costs made up by labour and raw materials. These themes generally reflect two aspects of Porter's theory of competitive advantage: factor conditions, and product differentiation (which has been related above to value added). This is not to minimize the importance of competitive scope, or the other determinants of competitive advantage, but for practical concerns over questionnaire length trade-offs had to be made. Factor conditions was chosen because of the close link between the food processing industry and factor inputs, and product differentiation was emphasized because of its link to value added.

3.1.3 Questionnaire Implementation

The implementation of the questionnaire involves several steps: defining the population; obtaining letters of support from the Canadian Manufactures Association (CMA); and undertaking two mailings.

The list of firms surveyed was purchased from Scotts Industrial Directories. The food processors defined by the directory (using SIC codes) range from meat packing to beverage production. There were, however, some types of firms within this broad classification which were not appropriate for the survey, and were excluded from the population: retail bakeries; manufactured ice; and feed processors. Retail bakeries were excluded because they only serve a very small local market, and are more a retail operation than a manufacture. Similarly, ice manufactures serve a very local market, and produce a product which can be found anywhere with the same qualities. Finally, feed processors by

definition are not producing products for human consumption, and so were excluded. With the exclusion of these firms the total population was 550 firms.

Two mailing were conducted in the fall of 1992. The first mailing was undertaken on November 9th and included: the questionnaire; a covering letter explaining the purpose of the questionnaire, its confidentiality, and an offer of a summary of the result of the survey; and for Nova Scotia and Prince Edward Island a letter of support from the Canadian Manufacturers Association (CMA). The support of the CMA was sought in an effort to increase the perceived legitimacy of the survey, and therefore improved response rates. The New Brunswick office of the CMA refused to participate. The second mailing was sent to the same firms a month latter, and included a covering letter explaining the purpose of the survey and its confidentiality, and a second copy of the questionnaire.

3.1.4 Response Rate and Potential Bias

The overall response rate was 29% (see Table 3.1). The responses for Prince Edward Island and Nova Scotia were about the same, while New Brunswick's was substantially lower. The lower New Brunswick rate may be explained by the lack of a letter of support from the CMA. These rates are about in the mid range of what would be expected from a business survey. Similar business survey response rates range from a high of 79% in a study of small high technology firms by Oakey(1984) to a low of 14.4% in a labour market study by Angel (1991). However, most are in the 30% range (Daniels, 1983; Harrington and Lombard, 1989; and O'Farrell,1992). Therefore, based on the literature, the response rate is within the acceptable range of similar published studies. In addition, the absolute number of responses allows for considerable latitude when conducting statistical analysis.

Table 3.1: Response rates to the questionnaire - by province

	Prince Edward Island	Nova Scotia	New Brunswick	Total
Population (N)	69	229	252	550
Response	25	76	58	159
Response Rate	36.23%	33.19%	23.02%	28.91%

Source: Survey Data

Bias is of course a strong concern when conducting any survey based study. For mail based surveys bias is a particular concern because low response rates provide a strong possibility of self selection bias. It is difficult to account for self selection bias because it is impossible to know the characteristics of the non-respondents. However, late respondents may reflect better those refusing to participate in the survey. The differences between late and early respondents was tested for firm size and the degree of value added production. Only in terms of firm size was there approaching a significant difference in the responses. The results appear to suggest a slight bias towards sampling larger over smaller firms.

3.2 Statistical Methods

There were two types of statistical tests used in the survey: the Kolomogorov-Smirnov Test (K-S test); and concordance-discordance measures of association and tests of significance (C-D Test). The K-S test was used for cross-tabulations of nominal-ordinal data, and concordance-discordance was used for ordinal-ordinal cross-tabulations. Described below are the basic characteristics of both tests and their relevance to the data at hand.

3.2.1 The Kolmogorov-Smirnov Test

The K-S test is used to determine whether two samples are drawn from the same population. It assumes that the variables are ordinal or at a higher level of measurement, the sample is classified into two mutually exclusive categories, and is drawn from a population with a continuous distribution. An alternative to the K-S test is the Chi-Square test. The K-S test, however, provides two advantages: there are no limits on the size of the sample and the expected frequencies, and the K-S test is usually more powerful (Norcliffe, 1977).

For our purposes the one-tailed, two sample K-S test will be used. The test is defined as follows:

$$D = \max(S_m - S_n) \quad (1)$$

$$\chi^2 = 4D^2mn/(m+n) \quad (2)$$

where:

m, n = number of observations in the two samples
S_m, S_n = two sample (m, n) empirical cumulative distribution functions
χ^2 = Chi-Square value

There is a significant difference between the two samples when $\chi^2 \geq \chi^2_\alpha$. Where, χ^2_α is the chi-square critical value with two degrees of freedom.

3.2.2 Concordance-Discordance Measure of Association and Significance

Although a considerable proportion of the data set can be analyzed using the K-S test, in many instances the variables being cross-tabulated were both ordinal. There were several options for analyzing ordinal variables: Chi-square; the Kruskal-Wallis H test; and concordance-discordance measures of association and tests of significance. However, the

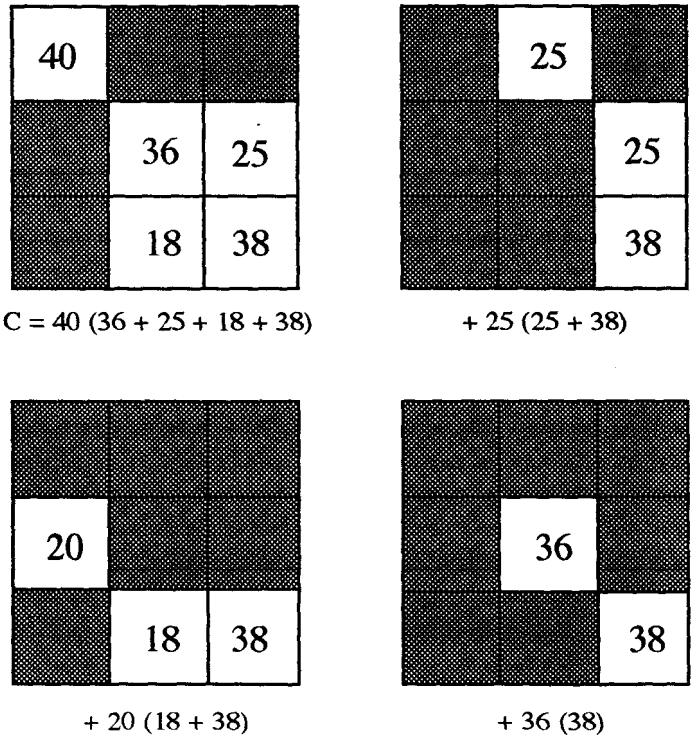
Chi-square and Kruskal-Wallis H test were not ideal for analyzing the data set. To account for the expected frequency assumptions of the Chi-square test, in most cases the categories would have to be combined and the resulting loss of information reduces the power of the test. The Kruskal-Wallis H test presented its own problems. First, since the data is ranked information is lost, and secondly, because the data is ordinal and the data set is relatively large most categories will have a large number of ties. The test can correct for ties, however, this makes the test more conservative (Ebdon, 1985), and therefore, less powerful. In short, although both tests are workable they are not ideal. The explanation of concordance and discordance to follow is a summary Agresti's (1984) explanation of it.

A pair of observations is concordant if the member that ranks higher on the Y variable also ranks higher on the X variable. To illustrate this, Table 3.2 gives a fictitious cross-tabulation similar to that used in the analysis. The hypothesis would be that firms which add more value to their inputs would rate higher the importance of R&D for firm success. Starting with a pair of individuals, one of whom rated both categories low, and the other rated both moderate. This would be a concordant pair because it agrees with the hypothesis that firms with higher value added would rate R&D more important. Each individual company which rated both categories low would form concordant pairs with those companies who rated both moderate. The number of concordant pairs for these two cells would be 40 x 36 = 1000. Those 40 firms who rated both low would also be concordant with those firms who had a moderate level of value added and rated R&D high (40 x 25). The same pattern can be followed for all possible concordant combinations as illustrated by Figure 3.2 and equation (3).

Table 3.2: Cross-Tabulation of the Importance of R&D for Firm Success and the Level of Value Added

Level of Value Added	Importance of R&D for Firm Success: Low	Moderate	High
Low	40	25	12
Moderate	20	36	25
High	10	18	38

Figure 3.2: Illustration of Concordant Pairs



$$C = \sum_{i<k} \sum_{j<l} n_{ij} n_{kl} \quad (3)$$

Where:

C = total number of concordant pairs
k = row
l = column
i = row for concordant pairs kl
j = column for concordant pairs kl

A pair of observations is discordant if the member that ranks higher on the Y variable ranks lower on the X variable. The number of discordant pairs can then be calculated using equation (4)[4].

$$D = \sum_{i<k} \sum_{j>l} n_{ij} n_{kl} \quad (4)$$

Where:

D = total number of discordant pairs
i = row for discordant pairs to kl
j = column for discordant pairs to kl
n_{ij} = observations in cell ij
n_{kl} = observation in cell kl

Note that in the calculation of concordant and discordant pairs the ordinal nature of the variables is taken into account. This is in contrast to the Chi-Square test and the Kruskal-Wallis H test which treat one or both of the ordinal variables as nominal and in so doing information is lost, reducing the power of these tests.

The most general measure of association, and the one which will be used here is gamma (γ). Gamma is defined in equation 5 as,

$$\gamma = \frac{(C - D)}{(C + D)} \quad (5)$$

Gamma's range of values is $-1 \leq \gamma \leq 1$. This implies that if $\gamma = 1$ or -1 there is a perfect association and if $\gamma = 0$ the two variables are independent. However, this interpretation can be misleading as Table 3.3 illustrates. When $\gamma = 1$ it can indicate a strict relationship as in

example (a), however, as example (b) shows there can be ties in the rows or columns. In other words, an increase in the Y variable does not necessarily imply an increase in the X variable. In addition, example (c) illustrates that although independence is implied when $\gamma = 0$, this is not necessarily the case. A U-shaped distribution which clearly indicates an association between the two variables is ignored by the γ measure.

Table 3.3: Values of γ with various cross-classifications

(a) $\gamma = 1$	0.33	0	0
	0	0.33	0
	0	0	0.33
(b) $\gamma = 1$	0.2	0	0
	0.2	0.2	0.2
	0	0	0.2
(c) $\gamma = 0$	0.2	0	0.2
	0.2	0	0.2
	0	0.2	0

Source: modified from Agresti (1984)

Gamma is not the only measure of association, nor is it the strictest. For example, Kenndall's tau-b will indicate a perfect association only for a distribution like (a) in Table 3.2.1. However the strict relationship between the two variables implied by Kendall's tau-b is not consistent with the variables under study in the analysis. In other words, the analysis is concerned about, for example, the *tendency* for firms to rate a particular competitive factor highly depending on the degree of value added production. It matters less that there are some pairs of observations where an increase in value added causes no change in the rating of the competitive factor. Therefore, γ will be used in the analysis, but keeping in mind the limitations noted above.

However strong the association, whether it is due to chance is still in question. As will be seen in the analysis, it is possible to have relatively high levels of association, and find the null hypothesis cannot be rejected. In this case the test statistic is the z score, which is given by:

$$z = \frac{(C - D)}{\sigma(C - D)} \tag{6}$$

where,

$$\sigma^2(C - D) = \frac{[1 - \sum p^3_{i+}][1 - p^3_{+i}]n^3}{9} \tag{7}$$

where,

n = sample size
p_{i+} = the ratio of column totals to the n
p_{+j} = the ratio of row totals to n

Agresti (1984) notes that large random samples of C - D have shown to be approximately normally distributed, and therefore a large sample test of independence can use the z test statistic. As a rough guide for the use of the normal approximation both C and D should exceed 100. This is easily surpassed with the sample size obtained from the survey.

3.3 Conclusions

Based on the data requirements and concerns over financial and time costs a mail questionnaire instrument was chosen to collect the data for this study. Every effort was made to enhance the survey response rate without compromising the usefulness of the collected data. These efforts resulted in a response rate of approximately 30% which is in the mid range of similar business surveys. Although there is considerable potential for self-

selection bias, tests on the response rates of late respondents generally did not indicate a strong sampling bias. These tests, however, are limited.

Based on the types of questions used in the survey the resulting data is in nominal and ordinal form. To test the hypothesis in the data analysis two tests will be used: the K-S for nominal-ordinal variables, and concordance-discordance based tests for ordinal-ordinal variables. Concordance and discordance can also be used as a basis for measuring association.

CHAPTER 4

DATA ANALYSIS

4.0 Introduction

In previous chapters the underlying theme has been that firms who produce higher value added products are different in kind from firms who primarily produce lower value added products. In short, we are dealing with the difference between commodity and product producers, differentiated and undifferentiated products. As noted above, Porter makes the point that agriculture and resource extraction based industries depend on basic factors to create competitive advantage. To a large degree they are relying on one part of the national/regional diamond. However, it will be argued that higher value added firms rely on more specialized factor inputs and follow more sophisticated strategies based on these inputs. They emphasize different parts of the value chain and the value system. To a large degree we are speaking of firms which are deeper in skill and knowledge, and are wider in their linkage with the regional economy.

The survey was designed to address the factor conditions facing the Maritime food processing industry and the resulting competitive strategies which firms have followed. No pretension was ever held of addressing all the determinants of competitive advantage through a mail questionnaire. The analysis will then focus on five questions: (1) do higher value added firms sell their products based on different firm and product characteristics; (2) are there differences in the factor requirements of low and high value added firms; (3) do high value added firms follow different strategies to achieve competitive success; (4) have

higher value added firms been more successful; (5) and what constraints, if any, have affected higher value added firms?

Initially the basic attributes of the sample will be outlined (section 4.1), after which various characteristics of the firms will be compared based on the two *categorical* indicators of value added defined in Chapter 3. The analysis will include: the effect of greater value added on the importance of particular firm and product characteristics for the sale of products (section 4.2); the impact of greater value added production on the ratings of different factors which might affect competitiveness, and the strategies which firms follow when faced with increased competition (section 4.3 and section 4.4); the investment and spending patterns of low and high value added firms (section 4.5); the effect of higher value added production on growth (section 4.6); and some of the special problems higher value added firms might encounter (section 4.7).

4.1 Basic Characteristics of the Sample

There was a total of 159 usable questionnaires returned, of these 78 were fish processors and 80 were agrifood or beverage processors[5]. The surveyed firms employed a total of 21,950 full and part-time, and/or seasonal employees. Approximately 14,000 were employed by fish processors, and 7,500 employed by agrifood-beverage processors. The number of full time employees, however, was about the same for both. In general, the sample can be characterized as consisting of a large number of small and medium sized firms, with the median firm having 30 employees, but dominated in terms of employment by the larger firms. The top 10 firms employed 60.0% of all the workers in the sample. Fish processors tended to be larger, having an average and median employment about twice that of agrifood-beverage processors (see Table 4.1.1). Most of this difference, however, is due

to a greater reliance on part time/seasonal labour by fish processors. There is little difference in terms of median or average employment when only full time employees are taken into account.

Table 4.1.1: Employment by firm and employee type

	All Firms	Fish	Agrifood-beverage
Full Time and Part Time/Seasonal			
Total	21,905	14,377	7,498
Average/Firm	140	189	96
Median	30	47.5	20
Full Time			
Total	13,027	6,658	6,339
Average/Firm	84	88	81
Median	12	10	12
Part Time/Seasonal			
Total	8,878	7,719	1,159
Average/Firm	57	99	15
Median	17	31	7

Source: Survey Data (Question F6)

In terms of revenues, 64% of the firms had sales of $1 million or more over the past year (see Table 4.1.2). When the sample is broken down into fish and agrifood-beverage processors, fish processors tended to be larger with a higher percentage having sales of $1 million or more (73% vs 56%).

Table 4.1.2: Annual Firm Sales

	All Firms		Fish Processors		Agrifood-Beverage	
($000s)	Total	Percent	Total	Percent	Total	Percent
1 to 99	9	6.67%	3	4.69%	6	8.57%
100 to 499	26	19.26%	8	12.50%	18	25.71%
500 to 999	13	9.63%	6	9.38%	7	10.00%
1,000 to 4,999	32	23.70%	21	32.81%	11	15.71%
5,000 to 9,999	8	5.93%	3	4.69%	5	7.14%
10,000 to 49,999	24	17.78%	13	20.31%	10	14.29%
50000+	23	17.04%	10	15.63%	13	18.57%
Total*	135		64		70	

*The total number of firms is smaller than the survey sample because of respondent errors or missing data.
Source: Survey Data (Question F1)

Fully 58% of the firms surveyed exported part of their production. Almost all the fish processor exported (92%), while a minority, 24%, of the agrifood-beverage processors exported. Of the fish processors that exported, approximately 90% had half of their total sales outside Canada. None of the agrifood-beverage firms sold more than 50% of their production for export. The primary export market was the United States. Roughly half of the exporters sold more than 50% of their exports to the United States. Europe, the Far East, and the Caribbean are also important export markets, but the majority of firms sold less than half of their exports to each location.

Within Canada, 89% of the firms sold a portion of their production in the Maritimes, and 48% sold part of their production to the rest of the nation. Fish processors tended to sell less to the Maritimes (22% sold no production) than agrifood-beverage processors. Every agrifood-beverage firm sold some production in the Maritimes. Fish processors have been more successful in penetrating markets in the rest of Canada, with 57% of the firms having some sales, while only 38% of the agrifood-beverage processors have. When both exports and domestic sales are considered, fish processors tended to be

linked to a much greater degree to extra regional markets, while agrifood-beverage processors are very much dependent on regional markets.

The respondents were also asked to estimate their average sales growth or decline over the past 5 years. A large majority of firms grew over this period, with little difference in rates between fish and agrifood-beverage processors. Approximately half the respondents grew at an annual rate of greater than 10% (see Table 4.1.3). Therefore, overall the sample had relatively high growth rates. Whether this reflects the population as a whole is questionable. It would seem more natural for successful firms to be more forthcoming with information than those which have experienced difficulties. There may then be a bias in the sample towards higher growth firms. This is in addition to the potential biases identified in Chapter 3.

Table 4.1.3: Average annual growth/decline in sales (past 5 years)

	All		Fish		Agrifood-beverage	
Annual Decline/Growth	Total	Percent	Total	Percent	Total	Percent
> -20%	3	1.94%	2	2.63%	1	1.27%
-10 to 20%	13	8.39%	9	11.84%	4	5.06%
-1 to 9%	23	14.84%	10	13.16%	13	16.46%
0 to 9%	37	23.87%	17	22.37%	20	25.32%
10 to 19%	38	24.52%	18	23.68%	20	25.32%
>20%	41	26.45%	20	26.32%	21	26.58%
Total	155		76		79	

Source: Survey Data (Question C1)

In addition, the respondents were asked what were the causes of growth or decline. Most firms cited growing demand and finding new markets as the causes of growth. In addition, the introduction of new production processes and improvement of existing products were cited by slightly more than 40% of the firms. Those firms that saw declining sales blamed in order of importance: falling supply of raw materials; greater competition;

falling demand; and rising production costs (see Table 4.1.4). There were marked differences between the responses of fish and agrifood-beverage processors (see also Table 4.1.4). Agrifood-beverage processors referred more often to, growing demand, finding new markets, improvement of existing products, and the introduction of new products as causes of growth. Although these are cited often by fish processors, rising supply of raw materials (20%) was cited more often by fish processors than agrifood-beverage firms (9.8%). When declining growth is considered agrifood-beverage firms blame falling demand and greater competition as causes. However, 71% of the fish processors referred to falling supply of raw materials as a cause. Greater competition, rising production costs, and falling demand are cited less often by fish processors. Therefore, fish processors tended to be more closely linked to the supply for their level of sales.

Table 4.1.4: Causes of growing or declining processor sales

Causes of Growing Sales	All		Fish		Agrifood-beverage	
	Total	Percent	Total	Percent	Total	Percent
Growing Demand	65	56.0%	27	49.1%	38	62.3%
Less Competition	7	6.0%	2	3.6%	5	8.2%
Rising Supply of Raw Materials	17	14.7%	11	20.0%	6	9.8%
Falling Production Costs	7	6.0%	2	3.6%	5	8.2%
Introduction of New Products	50	43.1%	14	25.5%	36	59.0%
Improvement of Existing Products	51	44.0%	19	34.5%	32	52.5%
Finding New Markets	68	58.6%	27	49.1%	41	67.2%
Causes of Falling Sales						
Falling Demand	14	35.9%	4	19.0%	10	55.6%
Greater Competition	17	43.6%	8	38.1%	9	50.0%
Falling Supply of Raw Materials	18	46.2%	15	71.4%	3	16.7%
Rising Production Costs	10	25.6%	6	28.6%	4	22.2%

Source: Survey Data (Question C2)

It should be self evident by now that there are important differences between fish and agrifood-beverage processors in terms of who they employ, what geographic markets they serve, and what they see as causes of sales growth and decline. This may be a reflection of any number of factors: the type of resource; different patterns of demand; different production processes etc. In the analysis to follow when there are obvious differences between the two groups the data will be presented and analyzed to take this into account.

4.2 Indicators of Value Added

There were two higher value added indicators used in the survey (see Appendix A, Question D1, and D3). Each corresponds to possible strategies food processors might follow to add value to their products: low or high degree of processing; and a price or non-price marketing strategy. Low processors perform a minimum amount of processing, and produce products which look and taste as close as possible to the raw inputs. Primarily this form of processing is associated with the prevention of spoilage (freezing, canning etc.), and/or the provision of a product in a more usable form (i.e. filleting fish). Firms that follow a high processing strategy produce a product which is seen by customers as different than the ingredient or ingredients used in its production. For example, processing strawberries into strawberry jam, or fish into fish dinners. On the other hand, non-price competitors add value by creating perceived or real product qualities which differentiate them from competitors, and thereby allowing the firm to charge a premium for its products. Similarly, non-price firms can add value by tailoring their products to very specialized markets where there are few competitors. As noted in Chapter 2, product differentiation is a key strategy followed by food processors for securing and maintaining markets as well as

higher profits. Firms competing primarily in terms of price would add less value because they would be unable to charge a premium price.

Before outlining the responses of food processors to these value added indicators, it is useful at this time to establish that these are indicators beyond the logical arguments presented above and in Chapter 3. One of the most relevant pieces of evidence is the percentage of total operating costs made up by raw material (resource) inputs. A lower percentage would show that more value was added to the raw material inputs. Using concordance-discordance measures described in Chapter 3, there was found to be a significant negative relationship between the percentage of operating costs made up by raw material inputs, and the percentage of products marketed under a non-price strategy. There was also a strong significant negative relationship for firms with more production of higher processed goods. Therefore, these results would tend to support the original interpretation of these indicators.

The firms were asked to identify what percentage of their production involved a minimum amount of processing (see Table 4.2.1). A majority of the processors (65%) had over half of their sales made up of products which were low processed. This was particularly true of fish processors, where greater than 80% sold more than half their production as low processed products. Almost half of the fish processors sold all their production as low processed goods. Agrifood-beverage processors were evenly split between firms who sold a majority of their production as high processed products and low processed products. The sample also was also bimodal; firms tended to specialize as either low or high processors.

Table 4.2.1: Percentage of production which involves a minimum amount of processing

	All Firms	Percent	Fish Processors	Percent	Agrifood-beverage	Percent
0%	37	23.6%	6	7.7%	30	38.5%
1 to 24%	8	5.1%	3	3.8%	5	6.4%
25 to 49%	10	6.4%	3	3.8%	7	9.0%
50 to 74%	8	5.1%	4	5.1%	4	5.1%
75 to 99%	32	20.4%	25	32.1%	7	9.0%
100%	62	39.5%	37	47.4%	25	32.1%
Total	157		78		78	
Missing	2		0		2	

Source: Survey Data (Question D1)

As with low and high processing, the firms were asked to identify what percentage of their production was marketed based primarily on price. Unlike the processing strategies, the distributions tended to be more evenly spread, reflecting a greater ability for firms to follow one or the other strategy depending on the product. Roughly half of the firms sold more than 50% of their production primarily on the basis of price (see Table 4.2.2). Fish processors tended to rely to a greater degree on a price strategy, with 60% of the firms having greater than half of their production sold under a price strategy. Agrifood-beverage processors to a lesser degree, 43%, relied on a price strategy.

Table 4.2.2: Percentage of production of products sold primarily in terms of price

	All Firms	Percent	Fish Processors	Percent	Agrifood-beverage	Percent
0%	27	17.9%	9	12.2%	18	23.7%
1 to 24%	21	13.9%	10	13.5%	11	14.5%
25 to 49%	24	15.9%	10	13.5%	14	18.4%
50 to 74%	16	10.6%	8	10.8%	8	10.5%
75 to 99%	34	22.5%	17	23.0%	16	21.1%
100%	29	19.2%	20	27.0%	9	11.8%
Total	151		74		76	

Source: Survey Data (Question D3)

Overall, these results show that within the sample there is a significant amount of higher value added production taking place. However, the sample is dominated by neither low or high value added firms. This should provide a solid basis for the comparisons of the qualities low and high value added processors to follow.

Before presenting these cross-tabulations it is helpful to know what the relationship is between the two indicators of value added (see Table 4.2.3). There was a significant positive relationship between the degree of high processing production, and the degree of production sold under non-price competition strategies. However, the association was not high enough ($\gamma = 0.28$) to define the two indicators as direct substitutes. On the other hand, if we look at these indictors as representing complementary rather than alternative strategies a different conclusion can be drawn. Firms who consider all their products are sold in terms of price do a minimum degree of processing for almost all their products. In addition, only a minority of the firms, 22%, sold more highly processed than non-price production. On the other hand, firms who sold all their products through a non-price competition strategy are about as likely to produce low as highly processed products (see Table 4.2.3).

Table 4.2.3: Cross-tabulation of the percentage of production sold through a price strategy and the percentage of production sold through a low processing strategy (C-D test)

	Low Processing Strategy						
Price Strategy	100%	75 to 99%	50 to 74%	25 to 49%	1 to 24%	0%	Total
100%	24	3	0	0	0	2	29
75 to 99%	7	13	1	2	2	9	34
50 to 74%	5	4	1	1	0	5	16
25 to 49%	7	4	3	3	1	6	24
1 to 24%	7	4	2	3	3	2	21
0%	9	3	1	1	1	12	27
Total	59	31	8	10	7	36	151

$\gamma = 0.28$; $\alpha = < 0.001$

Source: Survey Data

Adding value through high processing, unlike non-price, tends not to be a stand alone strategy, but is most often combined with the other. As such, the comparison of price and non-price firms will take priority in the analysis.

4.3 Comparison of Price and Non-Price Competitors

The conclusions made above, and the significance placed on non-price competition strategies in the food processing literature, makes this section of the analysis particularly important. This emphasis is also reflected in the greater number of survey questions devoted to the differences between price and non-price firms. The analysis will cover, *inter alia*, the firm and product characteristics firms rely upon to sell their products, the distribution channels they use, as well as the factors which effect, and the strategies followed to maintain, competitiveness.

Product and Firm Marketing Characteristics

The processors were asked to rate the importance of various product and firm qualities for product sales, depending on whether the product was sold through a price or non-price marketing strategy. If a firm produced both, price and non-price products ratings were given for both (see Question D4). These product and firm qualities include: the products price; its uniqueness; brand name; quality; company reputation; and service to customers. Excluding price, it would be expected that non-price competitors would rate these qualities higher than price competitors. In other words, such factors as a product's brand name, or its uniqueness would be used by non-price competitors to differentiate their products. Based on the results of the survey, this is largely the case. Non-price competitors rated significantly higher, unique product, brand name, quality, and service to customers, and

price was rated significantly lower (see Table 4.3.1). For both packaging and company reputation there was no significant difference, but both tended to be rated higher by non-price competitors. If the sample is broken down between fish and agrifood-beverage processors the same general pattern emerges, however, few results were significant.

Table 4.3.1: Rating of the importance of product/firm characteristics for product sales (on a scale of 0 to 9), price/non-price strategies (K-S Test)

	Price Strategy			Non-Price Strategy		
	Average	Median	Standard Deviation	Average	Median	Standard Deviation
Unique Product***	3.32	2	3.38	5.45	7	3.57
Packaging	4.24	5	3.24	5.11	6	3.28
Company Reputation	6.63	8	3.25	7.14	8	2.73
Price***	6.83	8	2.54	4.59	5	3.08
Brand Name**	4.80	5.5	3.58	6.11	8	3.37
Quality*	7.60	9	2.67	8.65	9	0.81
Service to Customers*	6.06	8	3.54	7.27	9	2.90

α at: 0.001 (***), 0.01 (**), 0.05 (*)
Source: Survey Data (Question D4)

There are two conclusions which can be drawn from these results. First, they generally confirm the hypothesis that price and non-price competitors rely on different product characteristics for their sale. This is not surprising, but an important confirmation of the hypothesis nonetheless. Second, and maybe more critically, these different product and firm qualities have implications for the operation of the processors. The firms will focus on different parts of the value chain depending on the products they are producing. Non-price competitors may spend more on outbound logistics to get their product to market on time, marketing and sales to find and maintain markets, and technology development to produce new products. On the other hand, price competitors may focus their attention on reducing procurement and operations costs. These findings provide evidence towards the hypothesis that higher value added firms rely on different factors to be competitive (to be addressed below).

Distribution Channels

If processors are selling their non-price products based on different product and firm characteristics then these products may also flow through different distribution channels. In Chapter 2 it was argued highly differentiated products tend to be sold by retailers, while the least differentiated products are sold to other food processors (Connor et al, 1985). It should be noted that in this case the respondents were simply asked what percentage of their sales flowed through each distribution channel. Therefore, to determine the effect of greater non-price sales, the percentage of non-price production was cross-tabulated with the percentage of sales through alternative distribution channels.

The results outlined in Table 4.3.2 support the conclusions of Chapter 2. Firms with greater non-price production are more likely to sell directly to consumers or through retail stores. There was also a positive association for fish processors who sell through wholesalers/distributors. Commonly this fish is sold to retailers, often under another firm's brand name (Apostle et al, 1992). Non-price firms are much less likely to sell their production directly to other food processor, or through brokers/traders who sell primarily to other processors.

Table 4.3.2: Effect of greater non-price production on the importance of the following distribution channels (C-D Test)

	All Firms		Fish		Agrifood/ Beverage	
	γ	α	γ	α	γ	α
Consumers	**0.35**	<0.001	**0.51**	<0.001	0.18	0.074
Retail Stores	**0.16**	0.027	**0.45**	<0.001	-0.13	0.136
Other Food Processors	**-0.29**	0.007	-0.20	0.115	**-0.36**	0.018
Wholesalers/Distributors	0.10	0.100	**0.24**	0.017	-0.04	0.356
Brokers/Traders	**-0.27**	<0.001	-0.18	0.056	**-0.31**	0.045

Source: Survey Data (Question C3)

These results tend to confirm the contention that non-price firms emphasize within the value chain such activities as outbound logistics, and marketing and sales. If a firm is selling to another processor or through a trader, outbound logistics are not important activities. In addition, non-price firms are likely to be affected by different channel and buyer value chains within the value system. Retail stores and their customers demand a different product than, for example, other food processors. These are at least in part reflected in the different non-price product and firm qualities described above.

Success of Product Differentiation

If non-price firms are following a product differentiation strategy have they been successful? Have the firms differentiated their products enough to target markets with fewer competitors and premium prices? The short answer is, yes. Non-price products had significantly fewer competitors than products marketed primarily in terms of price (see Table 4.3.3). The majority of non-price products had fewer than five competing products. Firms also felt they had a greater degree of control over non-price product prices: price marketed products had an average rating of 3.68 on a scale of 0 through 9, while non-price competitors rated it at 5.59 ($\alpha = 0.001$ - K-S Test). If the sample is broken down between fish and agrifood-beverage processors the same basic pattern emerges. As an aside, the greater control over price by non-price competitors would appear to reinforce the contention that this is an indicator of value added. It is more likely the firms would be able to charge a premium for their products.

Table 4.3.3: Number of competitors for price and non-price marketed products (K-S Test)

No. of Competitors	Price	Percent	Non-Price	Percent
0	0	0.00%	5	5.88%
1 to 4	30	25.00%	41	48.24%
5 to 9	25	20.83%	15	17.65%
10+	65	54.17%	24	28.24%
	120		85	

α: 0.001
Source: Survey Data (Question D7)

Factors Affecting Competitiveness

The respondents were also asked to rate the importance of several factors which contribute to their firms' competitiveness. Since in this case the questions related to each firm as a whole, there was no specific breakdown for ratings of price and non-price products. Table 4.3.4 summarizes the firm responses. The highest rated factors were high quality products, good quality resource, knowledge of customer needs, and access to low cost resource. The lowest rated were, access to specialized services, and the ability to innovate new products. In part, the highest rated factors appeared to be the ones which were closely linked to the resource. While those factors which are often associated with the actual development or processing of products tended to be rated lower. This would appear to reinforce the perception of Maritime food processors as commodity, rather than product producers. In other words, *basic factors* like low cost, or good quality resource were rated highly, while more *specialized factors* like access to specialized services, and skilled and highly skilled employees were rated lower. The high standard deviations for most factors, however, should caution against broad generalizations.

Table 4.3.4: Ratings of the importance of the following factors (on a scale of 0 to 9) for firm competitiveness.

	Average	Median	Standard Deviation
Access to Low Cost Resource	5.86	7	3.25
Availability of Low Cost Labour	4.94	5	2.87
Access to Skilled and Highly Skilled Employees	4.85	5	2.90
Access to Affordable Financing	5.60	6	2.90
Access to Specialized Services	3.57	4	2.87
Good Quality Resource	7.16	8	2.53
Closeness to Main Markets	5.23	6	2.81
Knowledge of Customer Needs	6.77	8	2.59
High Quality Products	7.91	9	2.10
Ability to Innovate New Products	4.62	5	3.13

Source: Survey Data (Question E1)

The ratings summarized above were cross-tabulated against the percentage of production sold through non-price marketing strategies for each firm. Table 4.3.5 summarizes the results of the cross-tabulations for each competitive factor considered. At first glance the most notable characteristic of the table is the large number of significant results (based on the C-D test) for All Firm and Fish Processing categories, but only one for Agrifood-beverage. Agrifood-beverage processors with greater non-price production appear to see little difference in the importance of the competitive factors compared to price competitors.

Looking more closely at the results it is possible to identify some patterns. First, is the greater emphasis placed on access to low cost resource by firms with more price competitive production. Logically, firms that rely on price to sell their products would tend to be more concerned about the cost of the resource than firms who sell their products based on other factors. This conclusion is also consistent with the findings made above: price competitors tend to have a higher proportion of their costs made up by raw materials;

and price competitors rate lower their control over price. Obviously, they would be more sensitive to higher resource prices.

Table 4.3.5: Effect of greater non-price production on the rating of the following factors for firm competitiveness (C-D test)

	All Firms		Fish		Agrifood	
	γ	α	γ	α	γ	α
Access to a Low Cost Resource	**-0.33**	<0.001	**-0.39**	0.01	**-0.23**	0.03
Availability of Low Cost Labour	-0.10	0.12	-0.15	0.11	-0.02	0.42
Access to Skilled & Highly Skilled Empl.	0.08	0.16	**0.23**	0.03	-0.07	0.27
Access to Affordable Financing	-0.07	0.22	**0.22**	0.05	0.13	0.14
Access to Specialized Services	**0.15**	0.04	**0.25**	0.01	0.04	0.36
Good Quality Resource	-0.14	0.16	-0.02	0.46	-0.19	0.14
Closeness to Main Markets	**0.14**	0.05	0.15	0.11	-0.03	0.41
Knowledge of Customer Needs	**0.21**	0.03	**0.24**	0.04	0.04	0.21
High Quality Products	0.28	0.14	0.27	0.20	0.25	0.27
Ability to Innovate New Products	**0.25**	<0.001	**0.22**	0.03	0.17	0.09

Source: Survey Data (Question E1)

Those firms with a larger percentage of non-price product sales rated significantly higher: access to specialized services; closeness to main markets; knowledge of customer needs; and ability to innovate new products. Ranging from a γ of 0.14 for closeness to main markets, to 0.25 for ability to innovate new products. Access to specialized services, knowledge of customer needs and ability to innovate new products would be logically associated with firms trying to differentiate their products from those of competitors. These specialized factors would also support higher order competitive advantages.

There was no significant difference in the ratings for access to skilled and highly skilled employees, even though this would also be more indicative of more sophisticated competitive strategies. However, there was a significant positive association for fish processors. Fish processors also found access to affordable financing more important as the proportion of non-price sales increased. This may be an indication of a greater need for

capital with increased non-price production. Good quality resource and high quality products were rated highly by all firms, making it difficult for there to be any significant variation between price and non-price competitors.

Competitive Strategies

The respondents also rated different strategies they might follow when faced with increased competition for markets (Question E2), and/or increased costs in accessing them (see Table 4.3.6). The firms rated highest looking for new markets, and the reduction of overhead costs as strategies to maintain their competitiveness. These strategies were also the ones with the least variation, indicating less disagreement between the firms compared to the other possible strategies. The more complicated strategies tended to be rated lower. For example, upgrading skills of employees and R&D new products were rated at about the mid point of 4.5.

Table 4.3.6: Ratings on of the importance of the following strategies (on a scale of 0 to 9) to maintain the firms' competitiveness.

	Average	Median	Standard Deviation
Purchase New More Efficient Equipment	5.44	6	2.90
Introduce New Production Process Technology	4.63	5	2.99
Reduce Overhead Costs	6.65	7	2.35
Reduce Size of Labour Force	5.00	5	2.83
Look For Assistance From Government(s)	3.51	4	2.90
Introduce Quality Control Measures	5.22	6	3.05
Look For New Markets	6.82	7	2.28
Research and Develop New Products	4.65	5	3.17
Upgrade the Skills of Employees	4.36	5	3.09

Source: Survey Data (Question E2)

As with the competitive factors described above, when the rating were cross-tabulated with the degree of non-price production there were many significant, strong associations for the sample as a whole and for fish processors, but there are no significant associations for agrifood-beverage processors (see Table 4.3.7). Here we see firms who produce a greater proportion of non-price products rated most strategies higher than price competitors. This is especially true of fish processors which have particularly high levels of association.

Non-price competitors place greater emphasis on the purchase of new more efficient equipment, the introduction of new production processes, the introduction of quality control measures, research and development of new products, and the upgrading of employee skills. These strategies would tend to require much more sophisticated inputs in terms of services, labour and management skills and capital. There would then be more emphasis in the value chain on human resource development and technology development.

Also of interest, particularly when fish processors are considered, is the higher ratings for the more mundane strategies of reducing overhead costs and looking for assistance from government. Logically price competitors would be more concerned about overhead costs, but this is not the case. It is also curious to see firms who are willing to follow such sophisticated strategies also look to government for assistance. The greater reliance on government assistance, however, may be a reflection of the higher costs and possibly risks involved in the production and marketing of non-price products.

Table 4.3.7: Effect of greater non-price production on the rating of the importance of the following strategies to counter increased competition (C-D Test)

	All Firms		Fish		Agrifood/ Beverage	
	γ	α	γ	α	γ	α
Purchase New More Efficient Equipment	**0.15**	0.050	**0.33**	0.004	-0.07	0.280
Intro. New Production Process Tech.	**0.28**	<0.001	**0.42**	<0.001	0.06	0.310
Reduce Overhead Costs	0.13	0.100	**0.28**	0.030	0.01	0.480
Reduce Size of Your Labour Force	0.01	0.480	0.00	0.490	-0.05	0.360
Look for Assistance form Govt(s)	**0.15**	0.030	**0.33**	0.003	-0.05	0.350
Introduce Quality Control Measures	**0.18**	0.020	**0.34**	0.004	-0.07	0.280
Look for new Markets	0.02	0.420	0.19	0.120	0.12	0.210
Research and Develop New Products	**0.22**	0.005	**0.27**	0.010	0.12	0.180
Upgrade the Skills of Employees	**0.18**	0.010	**0.26**	0.010	0.07	0.270

Source: Survey Data (Question E2)

Non-price competitors then rely on different product and firm characteristics to market their products. They also have fewer competitors and have greater control over the price they charge. The product differentiation strategy non-price firms follow also affects, the distribution channels they use, their input requirements and the strategies they follow when faced with increased competition. Non-price, higher value added firms then focus on different parts of the value chain and the value system. In addition, the factors higher value added firms rely upon are more advanced, specialized factors, which support the higher order competitive strategies described above.

4.4 Comparison of Low and High Processors

There was of course a second indicator of value added included in the survey: the proportion of production which required high processing. As with price and non-price production, the percentage of highly processed products was cross-tabulated with the firms' ratings of various factors affecting their ability to compete (see Table 4.4.1) and strategies to

counter increased competition or costs accessing markets (see Table 4.4.2). C-D based measures of significance and association were used to test these cross-tabulations.

Factors Affecting Competitiveness

For the whole sample there is a similar pattern to that seen when comparing price and non-price competitors, only access to low cost resource is no longer significant. However, if the sample is divided into fish and agrifood-beverage processors the number of significant factors drop considerably. For fish processors these is no significant difference in the ratings of any competitive factors. In the case of agrifood-beverage processors there are two significant competitive factors: access to specialized services; and the ability of innovate new products.

Table 4.4.1: Effect of greater high processing on the ratings of the importance of the following factors for firm competitiveness (C-D test)

	All Firms		Fish		Agrifood-beverage	
	γ	α	γ	α	γ	α
Access to a Low Cost Resource	-0.09	0.18	-0.17	0.18	0.03	0.41
Availability of Low Cost Labour	-0.02	0.40	-0.16	0.13	0.10	0.22
Access to Skilled & Highly Skilled Empl.	0.05	0.29	-0.11	0.22	0.13	0.17
Access to Affordable Financing	0.05	0.30	0.11	0.24	0.16	0.12
Access to Specialized Services	**0.24**	0.004	0.11	0.20	**0.36**	0.003
Good Quality Resource	-0.12	0.22	-0.11	0.39	-0.02	0.46
Closeness to Main Markets	**0.15**	0.05	0.15	0.13	-0.07	0.33
Knowledge of Customer Needs	**0.16**	0.03	0.10	0.27	0.17	0.22
High Quality Products	0.21	0.23	0.25	0.27	0.13	0.39
Ability to Innovate New Products	**0.32**	<0.001	0.04	0.39	**0.29**	0.02

Source: Survey Data (Question E1)

Competitive Strategies

As when the effect of greater non-price production was considered, very similar results were observed when the ratings of competitive strategies were cross-tabulated with the degree of high processing (see Table 4.4.2). However, again when the sample is divided between fish and agrifood-beverage processors the results change considerably. For fish processors the introduction of quality control measures, upgrading the skills of employees and the introduction of of new process technology are no longer significant. In addition, new production process technology and new product R&D do not have as high associations. Therefore, fish processors with more highly processed production tend to rate higher the lower order competitive strategies of reducing overhead costs and seeking government assistance. On the other hand, agrifood-beverage processors generally give the same results as the overall sample. This is in direct contrast to the previous section where agrifood-beverage firms with greater non-price production rated none of the strategies significantly higher. The degree of high processing would appear then to have much more of an effect on the strategies followed by agrifood-beverage firms than non-price production. Why this is so is unclear. It may be a reflection of the greater emphasis on the part of agrifood-beverage processors placed on high processing compared to fish processors.

Table 4.4.2: Effect of greater high processing on the ratings of the following strategies to counter increased competition (C-D Test)

	All Firms		Fish		Agrifood-beverage	
	γ	α	γ	α	γ	α
Purchase New More Efficient Equipment	**0.23**	0.010	**0.23**	0.050	**0.27**	0.030
Intro. New Production Process Tech.	**0.30**	<0.001	0.21	0.080	**0.33**	0.010
Reduce Overhead Costs	0.16	0.070	**0.35**	0.030	0.09	0.280
Reduce Size of Your Labour Force	0.07	0.230	0.03	0.410	0.04	0.390
Look for Assistance form Govt(s)	**0.18**	0.030	**0.36**	0.036	0.05	0.360
Introduce Quality Control Measures	**0.19**	0.020	0.10	0.260	**0.37**	0.003
Look for New Markets	0.19	0.060	0.14	0.230	**0.31**	0.030
Research and Develop New Products	**0.34**	<0.001	**0.23**	0.050	**0.34**	0.010
Upgrade the Skills of Employees	**0.24**	0.004	0.13	0.170	**0.27**	0.020

Source: Survey Data (Question E2)

Therefore, the cross-tabulations based on the degree of high processing are in large part similar to the results of the previous section. The only significant differences emerge when the sample is divided between fish and agrifood-beverage processors. This may, as note above, be a reflection of agrifood-beverage processors placing greater priority on adding value through high processing, and fish processors emphasizing a non-price strategy.

4.5 Firms' Spending and Employment

To this point in the analysis the emphasis has been on the effect of greater value added production on the processors judgements or attitudes towards different factors and strategies which might affect their success as a business. Whether these attitudes are reflected in the firms' actual behavior is still to be answered. The spending and employment patterns of processors will be outlined below, as well as the effect of the degree of higher value added production on them. The survey questions in this case were nominal (Questions A1, A3-A5). For example, firms were asked to answer yes or no if they invested

in new plants over the past 5 years. As a result, the statistical test used in this section will be the K-S test.

Table 4.5.1 (below) summarizes the sampled firms' investment in new plants, and equipment, as well as spending on product research and development, product promotion and employee training. A relatively high percentage of the firms, 43.4%, invested in new plants and not surprisingly over 90% of the firms have made some investment in new equipment. Over half the respondents made expenditures on product R&D, product promotion, and employee training. The sample was also divided into fish processors and agrifood-beverage processors (not show here). Agrifood-beverage processors were less likely than fish processors to invest in new plants (37.5% vs 50.0%), and more likely to spend on product R&D (63.8% vs 43.6%), product promotion (80.0% vs 51.3%), and employee training (78.8% vs 60.3%).

Table 4.5.1: Firm investment/spending and use of government financial assistance for the following (past 5 years)

	Investment/Spending		Government Financing	
	Total	%	Total	%
New Plants	69	43.4%	45	28.3%
New Equipment	146	91.8%	93	58.5%
Product R&D	86	54.1%	45	28.3%
Product Promotion	105	66.0%	41	25.8%
Employee Training	111	69.8%	56	35.2%
Total Firms	159		159	

Source: Survey Data (Question A1 and A3)

The firms were also asked whether they had received financial assistance from government (see also Table 4.5.1). What is most significant about these results is the substantial influence government assistance may have on the investment and spending decisions of food processors. For most categories of spending/investment, half of the firms

who answered positively also received some form of financial assistance from government. It is difficult to assess the degree of influence government assistance has had on these investment and spending decisions, because the firms were not asked, for example, to specify the percentage of investment made up by grants. Nonetheless, the potential influence of government financial assistance is undeniable.

In addition to investment and expenditures, the respondents were asked whether they employed persons who specialized in product promotion (marketing), product R&D, quality control, and accounting/data processing (see Table 4.5.2). The majority of the firms employed persons in quality control and accounting/data processing. Only a third, however, employed persons specializing in marketing. Few fish processors, in particular, employed marketers (23.1%). The lowest percentage was firms with employees who specialized in product R&D at 18.2%. The low employment in R&D is consistent with the conclusions of Marion (1986) and Connor (1988), that food processing firms, often regardless of size, are not R&D intensive. Most innovation comes from outside the industry.

Table 4.5.2: The number of firms who employ persons, or contracted producer service firms located in the Maritimes, for the following functions (past 5 years)

	Employment		Producer Services	
	Total	%	Total	%
Product Promotion	55	34.6%	50	31.4%
Product R&D	29	18.2%	61	38.4%
Quality Control	100	62.9%	50	31.4%
Accounting/Data Processing	110	69.2%	62	39.0%
Total Firms	159		159	

Source: Survey Data (Questions A4 and A5)

The respondents were also asked whether they had contracted similar producer services from firms located in the Maritimes over the past 5 years (see also Table 4.5.2). This does not exclude the possibility that firms contracted to firms outside the region,

however, it would be expected that the large majority of services would be sourced within the region. For product promotion the number of firms using producer services was similar to employment. A substantially larger proportion of the firms (38.4%) contracted out product R&D, making up partially for the relatively small percentage of firms with persons specializing in product R&D. Fewer firms tended to contract out quality control and accounting/data processing services.

As noted in the introduction to this section, the analysis to date has revolved around the differing attitudes or judgements of low and high value added firms, but it is in the behavior of these firms that these are made real. It might be hypothesized that, based on the results of the previous two sections, higher value added firms would spend more on the purchase of new equipment, product R&D, product promotion, and employee training. In addition, higher value added firms would be more likely to employ persons or use the services of outside firms or organization for product promotion, quality control, and product R&D. To test this hypothesis, the proportion of non-price/highly processed production was cross-tabulated with the respondents' investment, spending and employment patterns described above.

Table 4.5.3 shows the significance of the relationship between higher value added production and firm expenditures. The greater the proportion of a firms sales which were non-price, the more likely a firm was to spend on product promotion and employee training, but there was no significant difference for product R&D, new equipment or new plants. The degree of highly processed production has a similar effect, except that employee training is nearly, but no longer significant and new equipment has become nearly significant (see Table 4.5.3). The greater emphasis placed on product promotion and employee training agree with the hypothesis stated above. However, the lack of spending by higher value added firms on product R&D disagrees with the hypothesis.

Table 4.5.3: Significance of the effect of greater non-price/high processing production on firm investment and spending in the following areas (K-S Test)

	Firm Investment/Spending	
	Non-Price	High Processing
New Plants	0.9	0.7
New Equipment	0.9	0.1
Product R&D	0.3	0.3
Product Promotion	**0.01**	**0.01**
Employee Training	**0.02**	0.1

Source: Survey Data (Questions A1 and A3)

Higher value added firms are more likely to employ persons who specialized in product promotion than lower value added firms (see Table 4.5.4). There was, however, no significant difference for product R&D, quality control, and accounting/data processing. It was also the case that there was no significant relationship between a greater amount of higher valued added production and the use of producer services. This is counter to the results above, which suggest that firms with more higher value added production rate access to specialized services as more important than firms with less higher value added production.

Table 4.5.4: Significance of the effect of greater non-price/high processing production on firm employment and use of producer services for the following functions (K-S Test)

	Employment		Producer Services	
	Non-Price	High Processing	Non-Price	High Processing
Product Promotion	0.1	**0.01**	0.3	0.7
Product R&D	0.2	0.7	0.3	0.7
Quality Control	0.2	0.3	0.7	0.3
Accounting and Data Processing	0.9	0.5	0.7	0.9

Source: Survey Data (Questions A4 and A5)

The results from this section indicate higher value added firms are more likely to spend on product promotion and employee training, however, they are not more likely to spend on product R&D and quality control. Both are competitive strategies that were rated higher by higher value added firms. Therefore, the attitudes of higher value added firms are not fully reflected in their behavior. Possible causes of this will be addressed in Section 4.7.

4.6 Effect of Higher Value Added Production on Growth

In the last section the actual rather than the intended or implied behavior of low and high value added firms was presented. Similarly, it has been argued above that higher valued added firms should have higher growth rates than lower value added firms. The strategies higher value added firms rely upon to establish and maintain their competitiveness are less vulnerable to competition, and therefore, these firms are more likely to experience higher growth rates. In addition, there has been a shift in consumer demand towards higher value added, processed, high quality foods (Connor *et al*, 1985). At question is whether the growth performance of higher value added firms reflects their potential.

To test this hypothesis the degree of non-price production and highly processed production was cross-tabulated with the firms' growth rates and tested for association and significance using C-D based measures (see Table 4.6.1). Although in almost all cases the associations were positive, there were no significant results at a critical value of 0.05. In the case of high processing, for all firms and fish processors the level of significance approaches 0.05, but the associations at 0.12 and 0.14 were not particularly high. At best, it can only be inferred that there is a weak positive association.

Table 4.6.1: Effect of higher value added production on firm sales growth, over the past 5 years (C-D Test)

	Non-Price		High Processing	
	γ	α	γ	α
All Firms	0.04	0.37	0.12	0.09
Fish Processors	-0.03	0.44	0.14	0.08
Agrifood/ Beverage Processors	0.09	0.28	0.04	0.34

Source: Survey Data (C1)

As noted in Section 3.2, the firms were asked to cite what was the cause or causes of their growth, or decline in sales (Question C2). By classifying firms as either price or non-price, high or low processors its is possible to see the difference between them. If more than 50% of a processors production was non-price or highly processed, the firm was classified as such. Before discussing the results, it should be noted that it was not possible to statistically test the differences between the categories, since each firm could cite one or all the causes of growth or decline. In other words, they were not mutually exclusive, which is one of the assumptions of the K-S test. The discussion, therefore, will concentrate on the results where the differences are most obvious.

Table 4.6.2 presents what price and non-price competitors felt was the cause or causes of growth over the past five years. Non-price competitors refer less often to less competition, and rising supply of raw materials, and more often to the introduction of new products and the improvement of existing products.

Table 4.6.2: Causes of growth for price and non-price firms (past 5 years)

Causes of Growth	Growing Sales			
	Price		Non-Price	
	No. of Firms	Percent	No. of Firms	Percent
Growing Demand	29	50.88%	34	55.74%
Less Competition	6	10.53%	2	3.28%
Rising Supply of Raw Materials	11	19.30%	6	9.84%
Falling Production Costs	4	7.02%	4	6.56%
Introduction of New Products	21	36.84%	30	49.18%
Improvement of Existing Products	21	36.84%	30	49.18%
Finding New Markets	32	56.14%	36	59.02%
Total Firms	57		61	
Percent of Category	67.86%		81.33%	

Source: Survey Data (Question C2)

Most striking about what price and non-price competitors blame for declining sales (see Table 4.6.3) is the larger percentage of price competitors referring to greater competition and the larger proportion of non-price firms blaming rising production costs. Non-price firms appear to have been more successful at isolating themselves from competition, while on the other hand, have been less successful in controlling production costs. These costs, however, may be higher in order to differentiate non-price firms' products from that of their competitors.

Table 4.6.3: Causes of decline for price and non-price firms (past 5 years)

Causes of Decline	Declining Sales			
	Price		Non-Price	
	No. of Firms	Percent	No. of Firms	Percent
Falling Demand	9	33.33%	6	42.86%
Greater Competition	14	51.85%	4	28.57%
Falling Supply of Raw Materials	13	48.15%	6	42.86%
Rising Production Costs	5	18.52%	6	42.86%
Total Firms	27		14	
Percent of Category	32.14%		18.67%	

Source: Survey Data (Question C2)

The same cross-tabulations were carried out for low and high processors (see Tables 4.6.4 and 4.6.5). Similar to price competitors, low processors refer more often to rising supply of raw materials, and less often to the introduction of new products and the improvement of existing products. High processors tend to claim more often the improvement of new products and finding new markets as causes of growth. So in both cases the lower value added firms tended to be more dependent upon the volume of supply rather than the introduction or improvement of products for growth.

Table 4.6.4: Causes of growth in sales for low and high processors (past 5 years)

	Growing Sales			
	Low Processing		High Processing	
Causes of Growth	No. of Firms	Percent	No. of Firms	Percent
Growing Demand	40	54.79%	23	51.11%
Less Competition	3	4.11%	5	11.11%
Rising Supply of Raw Materials	14	19.18%	3	6.67%
Falling Production Costs	3	4.11%	5	11.11%
Introduction of New Products	28	38.36%	23	51.11%
Improvement of Existing Products	25	34.25%	26	57.78%
Finding New Markets	37	50.68%	31	68.89%
Total Firms	73		45	
Percent of Category	70.87%		80.36%	

Source: Survey Data (Question C2)

In terms of declining sales, low processors blamed falling supply of raw materials and rising production costs much more often than high processors. Again this appears to reflect a greater dependence on resource supply on the part of low processors. It would seem to make more sense that high processors should be more vulnerable to rising production costs, but it may be that producing higher value products allows them to absorb higher production costs more easily, either through lower margins or by raising the price. As noted above, higher value added firms tend to have greater control over prices.

Table 4.6.5: Causes of decline in sales for low and high processors (past 5 years)

	Declining Sales			
	Low Processing		High Processing	
Causes of Decline	Total	Percent	Total	Percent
Falling Demand	10	33.33%	5	45.45%
Greater Competition	14	46.67%	4	36.36%
Falling Supply of Raw Materials	16	53.33%	3	27.27%
Rising Production Costs	10	33.33%	1	9.09%
Total Firms	30		11	
Percent of Category	29.13%		19.64%	

Source: Survey Data (Question C2)

To summarize, there is no significant difference between the growth rates of high and low value added firms, however, when the causes of growing or declining sales are considered clear differences emerge which are consistent with the results of previous sections. Namely, higher value added firms tend to put more effort into the introduction and improvement of products, and are less vulnerable to increased competition. These results also add to the analysis by pointing to the greater reliance of low value added firms on the supply of the resource for growth and their vulnerability to its decline. This would tend to confirm the views of the Economic Council of Canada (1977) and Porter (1991), that competing on the basis of undifferentiated commodities may not be a sustainable strategy.

Regardless of the different causes of growth or decline, the overall outcome is still the same; there is no significant difference in growth rates of low and high value added firms. This begs the question, why? There are two possible and related explanations for this. It may be that adding little value through low processing and/or straight price competition are viable strategies. After all, at least for fish processors there is a considerable demand for their products regardless of what marketing or processing strategy they follow. There are many reports of the inconsistent quality of fish exports from Nova Scotia (c.f.

O'Farrell, 1990; and Apostle et al, 1992), but the fish is still sold. It may also be that firms can take advantage of lower factor costs which allows them to compete effectively in terms of price. Access to low cost resource was rated highly by all firms and significantly higher by low value added firms. On the other hand, the factors and strategies which higher value added firms rely on more may not provide them with advantages which are well beyond those of lower value added firms. In other words, there may be constraints on the provision of these factors or on the ability of higher value added firms to utilize them effectively. As O'Farrell (1990, 14) perceptively notes in his comparison of Nova Scotia and New England fish processors,

> "One marked difference between fish companies in the two areas is the willingness of U.S. firms to prepare and package products for different market segments...In general, all the Maine fish company proprietors were constantly seeking out new ways to segment the market. To sum up, it is clear that the Nova Scotia fish producers are selling a commodity and not a food preparation. The Nova Scotia industry appears to lose its competitive advantage once the fish is out of the water. Management has not trained the employees to ensure a consistent level of quality production..., and they have not segmented the market by introducing new higher value added products".

The next section of the chapter will provide some clues from the data to what these implied constraints may be.

4.7 Constraints to Higher Value Added Production

At the time the survey was constructed it was hypothesized that there might be several constraints as higher value added processors. In particular: the availability of capital, access to and the ability to keep skilled and highly skilled labour; and a reliable good quality supply of the resource. As noted above, the underlying assumption was that higher

value added firms relied to a lesser or greater extent on different factor inputs, and therefore may be more vulnerable to the absence or quality of these inputs.

The surveyed firms were requested to rate on a scale of 1 to 9 the willingness of private financial institutions to finance, the now familiar, new plants, new equipment, product R&D, product promotion, and employee training. For all the firms in the sample, only new equipment was rated on average above the mid point of 5. The lowest rated category was product R&D, followed by employee training, product promotion and new plants (see Table 4.7.1).

Table 4.7.1: Rating of the willingness of private capital to finance the following (on a scale of 1 to 9)

	All		Fish		Agrifood-beverage	
	Responses	Mean	Responses	Mean	Responses	Mean
New Plants	91	4.57	48	3.73	43	5.51
New Equipment	122	5.81	63	5.48	58	6.14
Product R&D	66	4.06	32	3.66	34	4.44
Product Promotion	70	4.27	31	3.65	39	4.77
Employee Training	72	4.17	33	3.67	39	4.59

Source: Survey Data (Question A2)

The generally low ratings for product R&D, product promotion and employee training would tend to disadvantage higher value added firms more than lower value added firms, since they rely to a greater extent on these activities to maintain their competitiveness. This is particularly true for fish processors because of their lower overall ratings.

The firms were also asked if they had difficulty finding or keeping unskilled, skilled and highly skilled employees (see Appendix A, Question A7 for a definition of unskilled, skilled and highly skilled employees). The constraining effect of any difficulty finding or keeping employees depends on how important they are for the firms' success, their ability to

compete. To address this, the firms were asked to rate on a scale of 0 through 9 the importance of unskilled, skilled, and highly skilled employees to their business success. By cross-tabulating these results with the degree of non-price and high processing production, the effect of higher value added on the ratings can be measured (see Tables 4.7.2 and 4.7.3).

Table 4.7.2 shows that highly skilled employees are more important for firms with greater non-price production. There is also a positive tendency for skilled employees as well, but it is only significant for fish processors.

Table 4.7.2: Effect of greater non-price production on the ratings of the following types of employees for business success (K-S Test)

	All Firms		Fish Processors		Agrifood/ Beverage	
	γ	α	γ	α	γ	α
Unskilled	0.05	0.28	0.08	0.26	0.04	0.38
Skilled	0.13	0.10	**0.28**	0.02	-0.11	0.25
Highly Skilled	**0.24**	0.01	**0.43**	<0.001	0.03	0.43

Source: Survey Data (Question A7)

The results for firms with greater high processed production (see Table 4.7.3) follow generally the same pattern. There is a significant positive association between greater highly processed production and the rating of highly skilled employees. However, there is no positive association for skilled employees.

Table 4.7.3: Effect of greater higher processed production on the ratings of the following types of employees for business success

	All Firms		Fish Processors		Agrifood/ Beverage	
	γ	α	γ	α	γ	α
Unskilled	-0.01	0.46	-0.12	0.19	0.16	0.12
Skilled	-0.01	0.47	-0.13	0.19	-0.04	0.41
Highly Skilled	**0.17**	0.05	0.05	0.32	0.19	0.11

Source: Survey Data (Question A7)

In short, the tables above would appear to suggest that skilled, and particularly highly skilled employees, are viewed by higher valued added firms as more important to their success than lower value added firms.

If, as we have just established, higher value added firms value highly skilled, and to some degree skilled employees more, then any difficulty finding or keeping such employees could act as a constraint on the effective operation of these firms. As Table 4.7.4 shows between a quarter and a third of the firms had difficulty finding or keeping skilled and highly skilled employees. This is not an overwhelming constraint on higher value added production, but it is substantial. Obviously being unable to find qualified employees can negatively effect a firm's operations because of lost production, as well as search and training costs. These costs are even more acute if turnover rates are high.

Table 4.7.4: Number of firms with difficulty finding or keeping the following types of employees

	All Firms		Fish Processors		Agrifood/ Beverage	
	Yes	Percent	Yes	Percent	Yes	Percent
Unskilled	32	20.65%	20	26.67%	12	15.19%
Skilled	51	32.90%	24	32.00%	27	34.18%
Highly Skilled	42	27.10%	22	29.33%	20	25.32%
Total Firms	155		75		79	

Source: Survey Data (Question A8)

Why the firms had difficulty finding or keeping employees was also covered in the survey (see Table 4.7.5). The most highly cited cause of difficulty with unskilled employees was unemployment insurance. Unemployment insurance to a lesser degree was a problem for skilled employees and was of little importance for highly skilled workers. Not surprisingly as the skill level rose, finding trained workers became a greater problem

for the respondents. The same was true of the impact of higher paying jobs elsewhere. Therefore, with rising skill levels problems caused by unemployment insurance declined, while not enough trained individuals and higher paying jobs elsewhere became more important. Since higher value added firms rely to a greater degree on these types of skilled employees their problems are of greater concern for these firms.

Table 4.7.5: Causes of difficulty finding or keeping the following types of employees

	All Firms		Fish Processors		Agrifood/Beverage	
	Yes	Percent	Yes	Percent	Yes	Percent
Unskilled						
Not Enough Trained Individuals	3	9.38%	0	0.00%	3	25.00%
Unemployment Insurance	30	93.75%	20	100.0%	10	83.33%
Higher Paying Jobs Elsewhere	9	28.13%	6	30.00%	3	25.00%
Skilled						
Not Enough Trained Individuals	18	35.29%	5	20.83%	13	48.15%
Unemployment Insurance	20	39.22%	13	54.17%	7	25.93%
Higher Paying Jobs Elsewhere	20	39.22%	8	33.33%	12	44.44%
Highly Skilled						
Not Enough Trained Individuals	15	35.71%	8	36.36%	7	35.00%
Unemployment Insurance	2	4.76%	0	0.00%	2	10.00%
Higher Paying Jobs Elsewhere	19	45.24%	8	36.36%	11	55.00%

Source: Survey Data (Question A9)

Finally, it was hypothesized that the resource in terms of its supply, seasonality or quality might have a greater negative impact on higher value added firms. An inconsistent supply of the resource may make it more difficult to provide an assured supply to customers. In addition, fixed capital like plant and equipment may be underutilized. If the supply of the resource is seasonal the same problems might occur. Most firms also rated a good quality resource as important to their success, and therefore its quality may be important.

The respondents were initially asked whether they could rely on a consistent volume of the resource each year or season. Thirty-nine percent of the firms responded that they could not. Each respondent was also asked whether its plant or plants were idle greater than three months of the year due to the seasonal nature of the resource. Here again about 39% of the firms said they were idle part of the year. Are higher value added firms more or less affected by the consistency and seasonality of the resource they processes? To find out the responses of both questions were cross-tabulated with the two indicators of value added used in the survey (see Tables 4.7.6 and 4.7.7).

In general, higher value added firms tended to feel that they could better rely on a consistent volume of the resource (see Table 4.7.6), and they were less likely to be seasonally shut down (see Table 4.7.7). In both cases the results were significant for the high processing indicator of value added. Inconsistency, or seasonality of supply then might not be seen as a major obstacle to higher value added production. However, firms which follow a high processing strategy are likely to have higher fixed costs. This provides a strong incentive to have access to the resource year round. Therefore, the firms may be restricted to a more consistent, year round supplies of the resource. In this sense inconsistency and seasonality of supply may be a constraint on growth.

Table 4.7.6: Association between higher value added production and confidence in a consistent supply of the resource every year or season (K-S Test)

	All Firms	Fish Processors	Agrifood/ Beverage
Indicators	α	α	α
Price/Non-Price	0.2(+)	0.2(+)	0.9(-)
Low/High Processors	0.01(+)	0.1(+)	0.9(+)

association (+ or -)
Source: Survey Data (Question B1)

Table 4.7.7: Association between higher value added production and plants being idle more than three months of the year due to the seasonal nature of the resource (K-S Test)

	All Firms	Fish Processors	Agrifood-beverage
	α	α	α
Price/Non-Price	0.2(-)	0.2(-)	0.7(+)
Low/High Processors	0.001(-)	0.2(-)	0.2(-)

association (+ or -)
Source: Survey Data (Question B3)

The quality of the resource is the last constraint. Most firms rated highly access to a good quality resource as a factor affecting competitive success. As can be seen from Table 4.7.8 the vast majority of firms consider raw material quality as good or very good. Therefore, quality of the resource appears not to be a major concern. However, for the fishery O'Farrell (1990) and Apostle et al (1992) have noted the quality of some fish products from Nova Scotia have tended to be low, and this in part can be attributed to harvesting and handling procedures before the fish gets to the plant (O'Farrell, 1990). The lower percentage of fish processors rating the quality of the raw material as very good, and the higher percentage rating it as moderate provides some evidence to support O'Farrell's findings.

Table 4.7.8: Rating of the quality of the raw material (ocean or farm products) by food processors

	All Firms		Fish Processors		Agrifood-beverage	
	Total	Percent	Total	Percent	Total	Percent
Very Good	75	53.19%	33	45.83%	41	60.29%
Good	52	36.88%	28	38.89%	24	35.29%
Moderate	11	7.80%	9	12.50%	2	2.94%
Poor	1	0.71%	1	1.39%	0	0.00%
Very Poor	2	1.42%	1	1.39%	1	1.47%
Total	141		72		68	

Source: Survey Data (Question A5)

The results outlined above show that the availability of financial capital, and the difficulties firms have finding and keeping labour may be acting as a drag on the processing firms of the region, and particularly higher value added processors. The reliability and seasonality of resource supply may effect higher value added firms less, however, higher value added firms (particularly high processors) may be restricted to more reliable, year round supplies. Finally as just noted, the quality of the firms' resource inputs is considered good by a large majority of the firms, however, it may be of some concern for fish processors. We are then left with the conclusion that yes, based on the evidence presented there are constraints and they may have a greater impact on higher value added firms, but whether they provide a full explanation for the similar growth rates of low and high value added firms is still in question.

Porter would suggest that these are constraints resulting from largely factor conditions; one part of the national/regional 'diamond'. It is difficult to assess the strengths or weaknesses of the other parts of the diamond based on the survey data. However, some comment can be made based on other sources of information on home demand conditions, related and supporting industries and to a less degree firm strategy structure and rivalry.

One of the most important attributes of home demand is whether it anticipates or is similar to international demand. The evidence is at best incomplete, but there are some clues. For example, Nova Scotia has the highest consumption of milk per capita in Canada, but the lowest consumption of higher value milk products (i.e. yoghurt) (O'Farrel, 1990). There is, therefore, less incentive for local dairies to develop high value products which might be marketable nationally or internationally. The same can be said for salt fish. Most is consumed by ethnic consumers (primarily from the Caribbean) in the United States. Nova Scotia processors have lost the higher end of the market, and have only been

competitive in the lower quality low priced products (Apostle et al, 1992). As Apostel et al (1992, 138-139) note,

> "The crux of the problem is inconsistency and poor grading. One dealer's complaints ranged from poor handling of fish on board (e.g. washing, bleeding, icing) to poor processing...Problems in fish classification are chronic."

There are doubtlessly many explanations for such problems, but a competitive domestic market with sophisticated consumers would have prepared processors much better for international markets.

The regional market is also small, with less than two million consumers. In an industry where scale economies are often important, particularly in terms of advertising, market size may have restricted development. However, the existence of large firms like National Sea Products and McCain Foods would appear to run counter to this hypothesis.

Supporting industries for the Maritime food processing sector and those related to it have a relatively weak presence. For example, Canada's lack of an international presence in processing equipment and packing equipment industries puts the Maritime processing industry at a disadvantage (Porter, 1991). In addition, Nova Scotia input-output flows indicate there is little sourcing of machinery and equipment locally (one percent or less of total industry input costs - see Table 4.7.9).

Table 4.7.9: Selected Inter-Industry Flows (1984), Nova Scotia

	Inter-Industry Flows ($millions)		% of Total Inputs	
Industry	Food Products	Fish Products	Food Products	Fish Products
Agriculture	119.576	0.016	53.500%	0.006%
Fishing	0.000	178.082	0.000%	65.661%
Food Products	20.153	1.847	9.017%	0.681%
Fish Products	2.037	35.643	0.911%	13.142%
Pulp and Paper	6.201	4.060	2.774%	1.497%
Printing and Publishing	0.064	0.014	0.029%	0.005%
Machinery and Equipment	0.242	0.025	0.108%	0.009%
Electrical and Electronic Equipment	0.020	0.002	0.009%	0.001%
Miscellaneous Manufacturing	0.002	0.002	0.001%	0.001%
Business Services	5.644	6.307	2.525%	2.325%
Total Industry Inputs	223.506	271.216	100.0%	100.0%

Source: DPA Consultants (1989)

This becomes all the more important when we consider the importance of such industries for innovation. On a slightly more positive note, there would appear to be considerable use of business services (see Table 4.7.8; and Porter, 1991) by food processors. However, as MacDonald (1991) has found, with the exception of the Halifax area, the Maritime provinces are far below the Canadian average for the location of business services.

There is little direct evidence of the effect of firm rivalry on success of higher value added firms. Porter (1990) identifies rivalry as one of the most important parts of the national/regional 'diamond' because it can act as a catalyst to improve the other determinants of competitive advantage. Based on the data it is possible to speculate on whether there is rivalry within the food processing industry. First, following from Table 4.3.3 it would appear that non-price competitors do have fewer competitors, however, in very few cases there are no competitors in a market. There is then some potential for rivalry. On the other hand, the sample, although made up largely of small firms, is dominated in weight by larger

firms. This would appear to reduce the likelihood of firm rivalry. However, it is common knowledge that there is a strong rivalry between very large firms like McCain Food and Cavendish Farm, as well as some of the large and small fish processors within the region.

Based on the information presented above, it would appear demand conditions are relatively weak, related and supporting industries, often sources of innovation for food processors, do not appear to have a strong presence, and finally although there is some firm rivalry, it is unclear how effectively rivalry has improved the regional 'diamond'. Therefore, we can place the factor constraints identified above into the broad context of a regional 'diamond' which is relatively weak.

4.8 Conclusions

There are clear differences in what firm and product characteristics high value added processors rely upon to sell their products. In effect, higher value added firms are focusing on different parts of the value chain to add value to their material inputs. Higher value added firms also use different distribution channels to serve different types of buyers. Therefore, their relationship with the value system is different. Higher value added firms have to satisfy different distributor and buyer needs and this is reflected in the products and firm characteristics which higher value added firms emphasize. Namely, brand name, product uniqueness, service to customers and quality. Price is much less a concern. Since higher value added firms compete on a basis other than price, they tended to have greater control over the price they charged, and this may be in part a reflection of their ability to target markets with fewer competitors.

If higher value added firms emphasize different parts of the value chain and the value system, then it was logical to argue they would rely on different factors to be

competitive. This was largely true, and in addition, the factors which were relied upon by higher value added firms can be classified as higher order. The strategies higher value added firms again tend to support higher order advantages.

It was also found in the analysis that the behavior of food processors in part, but did not fully, reflect what they thought were important strategies. The results appear to imply that although higher value added firms see investing in product R&D or spending on quality control are important, these intentions are not realized in practice.

As noted above, it is desirable to have greater value added production. One of the ways to increase this production is higher growth rates for higher value added firms. In addition, Porter would suggest the factors and strategies we have found higher value added firm rely upon should lead to higher long-term growth rates. However, no significant difference in growth rates was found between low and high value added firms. This of course begs the question, why?

This question was addressed by looking at Porter's four sources of competitive advantage. The constraints identified in the survey largely related to factor conditions. These include: access to affordable financing for such functions as product R&D; difficultly finding and keeping skilled and highly skilled employees; and particularly for the fishery a resource which is inconsistent in supply and often seasonal. There was also constraints which might be associated with the other parts of the Regional Diamond. First, demand may not anticipate, nor mirror demand in other regions. Second, related and supporting industries appear to be weak. Finally, it is unclear whether there is an effective level of rivalry to drive the system.

CHAPTER 5

CONCLUSIONS

5.0 Introduction

In Chapter 1 it was argued that, despite considerable effort, little progress has been made in reducing regional disparities over the past 30 years. It was also argued, there should be a shift in regional policy towards encouraging indigenous industries. This change in direction ultimately leads to questions of what types of production should be encouraged and what obstacles might discourage this production? It should be self-evident by now that these are deceptively simple questions. However, to a significant degree they have been addressed, and we can draw from these conclusions some comment on regional development policy and what direction it might take.

5.1 Major Research Findings

Although this is primarily empirical research, theory has played an important part in this study, informing the research design and the analysis. The primary reason for introducing theory was to understand what circumstances led to greater value added production in a peripheral region's resource industry. Therefore, what we draw from theory is also an important conclusion of the study.

Three theories of regional growth and disparity were discussed: Core-periphery, Staples, and Neoclassical. Core-periphery theories suggest there are two types of development: locally developed industry, and development resulting from the relocations of industry. The Maritime provinces have experienced both types of development. Most

indigenous growth has been in the resource sector, and with a few exceptions, efforts to attract industry outside the resource sector have been unsuccessful. Staples theory provides a basis for understanding resource development, however, it does not give a full understanding of why forward linkages (value added) does or does not occur. Bradfield's (1988) analysis of neoclassical theory, however, does point towards such factors as differences in labour and resource quality, capital costs, etc. as reasons why different regions develop different industries.

It was possible to pull all these ideas into Porter's framework, and what can be drawn from Porter is this. The competitiveness of a region's industries and the products they produce ultimately depends on their level of productivity and productivity determines the standard of living. Resource industries rely primarily on basic factors to be competitive. However, if we want to add more value to the region's resource production this means a shift from commodity to product production. Products sold to final demand markets emphasize different parts of the value chain and the value system. In other words, these differentiated products require higher order competitive strategies, and advanced or specialized factor inputs. To create these advantages means a strong regional 'diamond'. Basic factor advantages are no longer sufficient.

We were, therefore, left with the simple hypothesis that there are significant differences between low and high value added firms and that it is in these differences that explanation is found. To a large degree this hypothesis was supported by the evidence. Higher value added firms tend to sell their products through different distribution channels, and based on different product qualities. They also tend to rely on different factors and strategies to establish and maintain their competitiveness. In general, higher value added firms follow higher order competitive strategies which emphasize different parts of the value chain and the value system. In other words, higher value added firm create advantage

through such strategies as product differentiation (unique products and services), and brand name reputation. Creating such advantages requires more advanced factors, as well as the assistance of related and supporting industry, and the incentive of strong home demand and firm rivalry. The ability of higher value added firms to effectively pursue such strategies, however, was found to be affected by negative factors conditions facing the firms as well as potential weaknesses in the other parts of the regional 'diamond'. This is, at least in part, an explanation of why we do not observe significantly higher growth rates for higher value added firms, and possibly why regional development policy has been largely ineffective at encouraging such growth.

5.2 Policy Implications

Early on in the discussion it was argued that adding more value to the region's resource output may be an important source of growth for two reasons. First, the region's manufacturing sector is still largely resource dependant. Second, the Maritimes resource base is limited and there is little prospect for substantial increases in the volume of production. In other words, if the goal of regional development policy is to encourage growth based on local industries, then greater value added within the resource sector is important source of growth. It was also concluded that the Maritime provinces, despite many development initiatives, have had difficulty encouraging more manufacturing, and in particular more value added to the region's resources.

The objective of this study was not to arrive at a policy prescription for the food processing industry. The challenges facing this industry are too diverse and complex for any one study to outline a coherent policy. The difficulties involved with managing the fishery should give any policy maker pause. However, there are policy implications which

logically follow from the analysis which can legitimately be discussed. Policy was the starting point for this study and it is fitting that it should end it.

Maritime industry has consistently had difficulty adding value to its staples production. At the same time, the generally low value added production the region relies on is vulnerable to competition and the development of substitutes elsewhere. However, as was established in Chapter 4, higher value added firms are more likely to rely on higher order strategies which are less vulnerable to competition. Therefore, in addition to the potential increased income for the region, higher value added production is more likely to be competitive in the long run. This is particularly true of food products, since the market trend has been towards higher value added products.

Regardless of the benefits of greater value added, implementing policies to encourage it promises to be a formidable task. The most certain conclusion we can make about policy is that simple, straight forward policy solutions to regional development problems will be ineffective if the objective is to encourage higher value added production. As Porter (1990, 682) states, "The quick, easy roles of government (subsidy protection, macroeconomic management) are either insufficient or counter productive". If a firm is producing a low value semi-processed commodity, policies to reduce factor costs (i.e. resource costs) may be effective, however, this strategy would be largely ineffective for a firm which is producing a product for final demand. In fact, if such a policy were in place the government may be providing a disincentive for firms to shift from low value added commodities to higher value added products. As has been established above, the requirements of these firms are different and often more complex. Higher value added firms tend not to sell solely on the basis of price, but use such product qualities as brand name, or product uniqueness to gain market share. Higher value added firms tend to require the support of the whole regional 'diamond' to be effective competitors. The implications of

this are clear. Government policy should be oriented towards strengthening all parts of the 'diamond'.

Strengthening all parts of the regional diamond of course implies orienting government policy towards improving demand and factor conditions, encouraging related and supporting industry, and firm strategy, structure and rivalry. It is clearly impossible for any government to create a regional 'diamond'. However, if initiatives are directed toward indigenous industry, then parts of the diamond are already in place, and therefore policy can be directed towards improving what already exists. For example, governments can encourage curriculums and research which is oriented towards the industries of the region; improving factor conditions. In addition, by setting high quality standards for government procurement demand conditions can be improved. Related and supporting industries can also be identified and encouraged through similar measures. Finally, firm rivalry can be assisted by prohibiting excessive industry concentration and ensuring all government contracts are tendered.

Past regional policy directed towards the Maritimes has tended to be *ad hoc* and oriented towards direct incentives to business, often through cash grants or soft loans for fixed assets (O'Farrell, 1990). If anything, the results of this study appear to call for a much broader, more coordinated approach to development.

FOOTNOTES

Chapter 2

1. Courchene also argues that migration as an adjustment mechanism may not be totally effective due to such factors as the selectivity of migration; generally the young migrate, leaving older, less educated workers behind.

2. Courchene (1986) argues differences in wages, for example, may reflect differences in utility and therefore wage differentials may not reflect regional disparities or disequilibrium. This may in part be true, however, is this the real issue? A family may remain in Newfoundland to stay close to relatives and place, can explain why they accept a lower income, but does not deny the fact that they are less well off than if the family was living in Southern Ontario.

Chapter 3

3. The firms were also asked where they purchased their inputs. Unfortunately, the data from this question had to be excluded from the analysis because of uncertainty over whether products purchased in the region were actually produced there.

4. The number of discordant pairs for Figure 3.2 would be given by:

$$12(20 + 36 + 10 + 18) + 25(20 + 10) + 25(10 + 18) + 36(10)$$

Chapter 4

5. The total number of fish and agirfood-beverage processors do not add to 159 because one questionnaire could not be identified as either.

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APPENDIX A

SURVEY QUESTIONNAIRE

A. Inputs: In this section the questions will relate to the availability of capital for your company, the labour force you employ, and your access to outside services.

1. Over the past 5 years have you spent or invested in the following areas?

	YES	NO
NEW PLANTS	☐	☐
NEW EQUIPMENT	☐	☐
PRODUCT RESEARCH AND DEVELOPMENT	☐	☐
PRODUCT PROMOTION (Marketing)	☐	☐
EMPLOYEE TRAINING	☐	☐

2 How would you rate on a scale of 1 to 9 the willingness of banks or other sources of private funds to finance these activities? *If you do not have experience in a category leave it blank.*

POOR			MODERATE					GOOD
1	2	3	4	5	6	7	8	9

	Rating
NEW PLANTS	___
NEW EQUIPMENT	___
PRODUCT RESEARCH AND DEVELOPMENT	___
PRODUCT PROMOTION (Marketing)	___
EMPLOYEE TRAINING	___

3. Over the past 5 years have you received financial assistance from governments (grants, loans, loan guarantees, interest buydowns etc.) for the following?

	YES	NO
NEW PLANTS	☐	☐
NEW EQUIPMENT	☐	☐
PRODUCT RESEARCH AND DEVELOPMENT	☐	☐
PRODUCT PROMOTION (Marketing)	☐	☐
EMPLOYEE TRAINING	☐	☐

4. Do you employ persons who specialize in these jobs?

	YES	NO
PRODUCT PROMOTION (Marketing)	☐	☐
PRODUCT RESEARCH AND DEVELOPMENT	☐	☐
QUALITY CONTROL	☐	☐
ACCOUNTING AND DATA PROCESSING	☐	☐

5. Over the past 5 years have you used the services of consultants, and/or other organizations (universities, government departments, etc.) who specialize in the following types of work and are located in the Maritimes?

	YES	NO
PRODUCT PROMOTION (Marketing)	☐	☐
PRODUCT RESEARCH AND DEVELOPMENT	☐	☐
QUALITY CONTROL	☐	☐
ACCOUNTING AND DATA PROCESSING	☐	☐

(over to next page)

6. Where do you primarily purchase the following inputs from? *Mark just one box for each product or leave blank if you do not purchase the product.*

	MARITIMES	REST OF CANADA	OTHER
PRODUCTS OF OTHER FOOD PROCESSORS	☐	☐	☐
FOOD ADDITIVES/PRESERVATIVES	☐	☐	☐
CONTAINERS AND PACKAGING	☐	☐	☐
PROCESSING EQUIPMENT	☐	☐	☐

7. Employees are often classified into the following three categories:

- Unskilled - these employees can be easily and quickly trained to perform their tasks.
- Skilled - these employees usually perform repetitive tasks that require skills which may take a considerable amount of time to develop.
- Highly Skilled - usually these employees work at the most complicated jobs which tend not to be repetitive and require creative and problem solving skills.

On a scale of 1 to 9 how would you rate the importance of unskilled, skilled and highly skilled employees to the success of your business? *Write in "NO" if they are of no importance.*

	UNIMPORTANT							IMPORTANT
NO	1	2	3	4	5	6	7	8	9

	Rating
UNSKILLED	____
SKILLED	____
HIGHLY SKILLED	____

8. Have you had difficulty finding or keeping unskilled, skilled or highly skilled labour?

	YES	NO
UNSKILLED	☐	☐
SKILLED	☐	☐
HIGHLY SKILLED	☐	☐

(If no to all three skip to Section B)

9. What do you believe is the cause or causes of your difficulty in finding or keeping labour? *Check one or more of the boxes below for only the types of employees you have had difficulty finding or keeping.*

	UNSKILLED	SKILLED	HIGHLY SKILLED
NOT ENOUGH TRAINED INDIVIDUALS	☐	☐	☐
UNEMPLOYMENT INSURANCE	☐	☐	☐
HIGHER PAYING JOBS ELSEWHERE	☐	☐	☐
OTHER (please specify). _____	☐	☐	☐

(over to next page)

B. Resource: In this section the questions will relate to the effect of reliability, quality and seasonal nature of the resource you process on your operation.

Please note: If you purchase all your food inputs from other processors skip to section C.

1. In general can your firm rely on a consistent volume of raw materials (ocean or farm production) each year, or season?

YES... ☐ **(skip to question 3)**
NO.... ☐

2. Would you agree or disagree with the following statement?

The unreliability of supply means that our firm has to be more flexible by investing less in plant and equipment (fixed costs) and employing more labour which can be laid off if the supply slows down.

STRONGLY AGREE..... ☐
AGREE..... ☐
UNSURE..... ☐
DISAGREE..... ☐
STRONGLY DISAGREE..... ☐

3. Is your plant or plants idle (on average) more than three months of the year because of the seasonal nature of the resource you process?

YES ☐
NO ☐ **(skip to question 5)**

4. Would you agree or disagree with the following statement?

Since our operation is idle part of the year we invest less in plant and equipment (fixed costs) and employ more labour which can be laid off when the plant is shut down.

STRONGLY AGREE..... ☐
AGREE..... ☐
UNSURE..... ☐
DISAGREE..... ☐
STRONGLY DISAGREE..... ☐

5. Which term would best describe the quality of raw materials (ocean, or farm products) you process?

VERY GOOD..... ☐
GOOD..... ☐
MODERATE..... ☐
POOR..... ☐
VERY POOR..... ☐

(over to next page)

6. Would you agree or disagree with the following statement?

The quality of raw materials has negatively affected the price we receive for our product(s).

STRONGLY AGREE..... ☐
AGREE..... ☐
UNSURE..... ☐
DISAGREE..... ☐
STRONGLY DISAGREE..... ☐

7. Would you agree or disagree with the following statement?

The quality of raw materials has discouraged our firm from producing products for which we could receive a higher price than our present line of products.

STRONGLY AGREE..... ☐
AGREE..... ☐
UNSURE..... ☐
DISAGREE..... ☐
STRONGLY DISAGREE..... ☐

C. Markets: The questions in this section concern the demand for your products and the distribution system you use to meet it.

1. What was your average annual growth (or decline) in sales over the past 5 years?

Decline		Growth	
greater than 20%	☐	0 to 9%	☐
10 to 19%	☐	10 to 19%	☐
1 to 9%	☐	greater than 20%	☐

2. What do you feel is the cause or causes of the growth or decline? *Check one or more of the boxes.*

GROWING DEMAND..... ☐
FALLING DEMAND..... ☐
GREATER COMPETITION..... ☐
LESS COMPETITION..... ☐
RISING SUPPLY OF RAW MATERIALS..... ☐
FALLING SUPPLY OF RAW MATERIALS..... ☐
RISING PRODUCTION COSTS..... ☐
FALLING PRODUCTION COSTS..... ☐
INTRODUCTION OF NEW PRODUCTS..... ☐
IMPROVEMENT OF EXISTING PRODUCTS..... ☐
FINDING NEW MARKETS..... ☐
OTHER (please specify) _____
_____
_____

(over to next page)

3. What percentage of your product sales are sold <u>directly</u> to (or through) the following?

	NONE	1-24	25-49	50-74	75-99	100
CONSUMERS	☐	☐	☐	☐	☐	☐
RETAIL STORES	☐	☐	☐	☐	☐	☐
OTHER FOOD PROCESSORS	☐	☐	☐	☐	☐	☐
WHOLESALERS/DISTRIBUTORS	☐	☐	☐	☐	☐	☐
BROKERS/TRADERS	☐	☐	☐	☐	☐	☐

4. Of your production eventually sold to consumers, is it sold as no name/store brands or under a brand name/company name. *Check one or both of the boxes.*

NO NAME/STORE BRANDS ☐
BRAND/COMPANY NAME ☐

D. <u>Production and Marketing</u>: In this section the questions will relate to how you make your products, and how your firm markets them.

1. In general there are two food processing strategies which firms use:

A. Under strategy A firms do a minimum amount of processing to prevent spoilage (freezing, canning, drying, or curing), and/or to make the raw foods into a more marketable form (for example, filleting fish rather than selling them whole). In short, the main purpose of this processing stage is to make the food products look and taste as close as possible to the "real thing" while providing a convenient product to the buyer (consumer or other food processors). For example, fresh or I.Q.F fish fillets, frozen or canned corn, pasteurized milk etc.

B. Firms who follow strategy B process raw foods not only to prevent spoilage, but to change them into a new product which consumers see as in some way different from the ingredient(s) they are made from. For example, processing fish into fish sticks, or microwave dinners, strawberries into strawberry jam, broccoli into microwave ready broccoli and butter sauce, potatoes into oven ready french fries, milk into yogurt etc.

What percentage of your production is strategy <u>A</u>?

0	☐	25-49	☐	75-99	☐
1-24	☐	50-74	☐	100	☐

2. Is getting your products to market quickly important for keeping their value, in other words, to receive the highest price for your product?

	STRATEGY A	STRATEGY B
IMPORTANT	☐	☐
SOMEWHAT IMPORTANT	☐	☐
UNSURE	☐	☐
SOMEWHAT UNIMPORTANT	☐	☐
UNIMPORTANT	☐	☐

(over to next page)

3. As with processing there are in general two marketing strategies for processing firms:

   I. One strategy is to compete primarily in terms of price. In other words, although quality or company reputation may be important, the main selling point of the product is its price. Usually when firms are price competitors their products are basically the same as their competitors'.

   II. For the second strategy price may still be important, but firms rely more on a "non-price" competition strategy. This can be done in several ways. Processors can provide products to customers which are different or seen to be different than that of other competitors. (For example, through unique recipes, packaging, advanced production methods, substantially higher quality, advertising, brand names etc.) Other forms of non-price competition include tailoring products to very specialized markets where there are few competitors and/or finding markets where you can provide a product for a premium price (for example, selling high quality fresh fish to Central Canadian or U.S. Mid West markets).

   What percentage of your production is strategy I?

0	☐	25-49	☐	75-99	☐
1-24	☐	50-74	☐	100	☐

4. For the products you produce under strategy I and/or II rate on a scale of 1 to 9 rate the importance of these product and your firms characteristics for their sale. *If a characteristic is not relevant to your products leave it blank.*

UNIMPORTANT							IMPORTANT	
1	2	3	4	5	6	7	8	9

	STRATEGY I	STRATEGY II
UNIQUE PRODUCT.....	_____	_____
PACKAGING.....	_____	_____
COMPANY REPUTATION.....	_____	_____
PRICE.....	_____	_____
BRAND NAME.....	_____	_____
QUALITY.....	_____	_____
SERVICE TO CUSTOMERS.....	_____	_____
OTHER (please specify).		
_____	_____	_____
_____		

5. Approximately how many competitors do you have for products marketed under strategy I and/or strategy II?

	STRATEGY I	STRATEGY II
0.....	☐	☐
1-4.....	☐	☐
5-9.....	☐	☐
10+.....	☐	☐

(over to next page)

6. On average how many buyers do you have for your products for <u>one or both</u> strategies?

	STRATEGY I	STRATEGY II
1.....	☐	☐
2-4.....	☐	☐
5-9.....	☐	☐
10 +.....	☐	☐

7. For your products under strategy I <u>and/or</u> II on a scale of 1 to 9 how much control do you feel you have on the price you receive from your buyers? *Mark "NO" if you have no control.*

	LITTLE CONTROL			SOME CONTROL			STRONG CONTROL		
NO	1	2	3	4	5	6	7	8	9

	STRATEGY I	STRATEGY II
DEGREE OF CONTROL	_____	_____

<u>E. Competitiveness</u>: In this section the questions relate to the qualities of your firm that make it competitive.

1. For the following factors rate on a scale of 1 to 9 their importance for making your firm competitive. *Mark "NO" if a factor is of no importance.*

	UNIMPORTANT							IMPORTANT	
NO	1	2	3	4	5	6	7	8	9

	Rating
ACCESS TO A LOW COST RESOURCE (from the ocean or farm).....	_____
AVAILABILITY OF LOW COST LABOUR.....	_____
ACCESS TO SKILLED AND HIGHLY SKILLED EMPLOYEES.....	_____
ACCESS TO AFFORDABLE FINANCING.....	_____
ACCESS TO SPECIALIZED SERVICES (marketing, engineering, R&D etc.)	_____
GOOD QUALITY RESOURCE.....	_____
CLOSENESS TO MAIN MARKETS.....	_____
KNOWLEDGE OF CUSTOMER NEEDS.....	_____
HIGH QUALITY PRODUCTS.....	_____
ABILITY TO INNOVATE NEW PRODUCTS.....	_____
OTHER (please specify)_____	_____

(over to next page)

2. When faced with increased competition for markets or increased costs in accessing them (higher transport costs, a high dollar, etc.), could you rate on a scale of 1 to 9 the importance of these strategies to keep your firm competitive. *Mark "NO" if a strategy is of no importance.*

	UNIMPORTANT							IMPORTANT
NO	1	2	3	4	5	6	7	8	9

	Rating
PURCHASE NEW MORE EFFICIENT EQUIPMENT	____
INTRODUCE NEW PRODUCTION PROCESS TECHNOLOGIES	____
REDUCE OVERHEAD COSTS	____
REDUCED SIZE OF YOUR LABOUR FORCE	____
LOOK FOR ASSISTANCE FROM GOVERNMENT(S)	____
INTRODUCED QUALITY CONTROL MEASURES	____
LOOK FOR NEW MARKETS	____
RESEARCH AND DEVELOP NEW PRODUCTS	____
UPGRADED THE SKILLS OF EMPLOYEES	____
OTHERS (please specify).	
_____	____
_____	____

F Business Characteristics: **This last section lets us know some of the basic characteristics of your business as of your last completed fiscal year.**

1. What were your sales over the past year ($thousands)?

1-99 ☐	500-999 ☐	5000-9,999 ☐	50,000+ ☐
100-499 ☐	1,000-4,999 ☐	10,000-49,999 ☐	

2. Do you export? YES ☐
NO ☐ **(if no skip to question 5)**

3. What percentage of your total sales are exports?

0 ☐	25-49 ☐	75-99 ☐	
1-24 ☐	50-74 ☐	100 ☐	

4. Of your total export sales what percentage is sold to the following countries/regions of the world?

	0	1-24	25-49	50-74	75-99	100
UNITED STATES	☐	☐	☐	☐	☐	☐
EUROPE	☐	☐	☐	☐	☐	☐
FAR EAST (Japan, S. Korea, Taiwan, China)	☐	☐	☐	☐	☐	☐
CARIBBEAN	☐	☐	☐	☐	☐	☐
OTHERS	☐	☐	☐	☐	☐	☐

(over to next page)

5. What percentage of <u>domestic</u> sales are made in:

	0	1-24	25-49	50-74	75-99	100
MARITIMES.....	☐	☐	☐	☐	☐	☐
THE REST OF CANADA....	☐	☐	☐	☐	☐	☐

6. How many people did you employ over the past year?

FULL TIME..... _____
SEASONAL/PART TIME..... _____

7. What percentage of your total operating costs are made up by labour costs?

less than 20 ☐	30-39 ☐	50-59 ☐	70-79 ☐
20-29 ☐	40-49 ☐	60-69 ☐	greater than 80 ☐

8. What percentage of your total operating costs are made up by raw material (ocean or farm production) inputs?

less than 20 ☐	30-39 ☐	50-59 ☐	70-79 ☐
20-29 ☐	40-49 ☐	60-69 ☐	greater than 80 ☐

9. What are your top 5 products in terms of sales?

1. _____
2. _____
3. _____
4. _____
5. _____

THANK YOU FOR YOUR ASSISTANCE