

Are Canadian Food Processors Flexible? A Case Study Analysis

Erna van Duren
David Sparling
Calum Turvey
Linda Lake¹

Paper Presented at the IAMA Symposium

Sydney, June 27, 2001

Comments to Erna van Duren or David Sparling
evandure@uoguelph.ca, dsparlin@uoguelph.ca

¹ van Duren and Sparling are equal first authors. van Duren, Sparling and Turvey are associate, assistant and full professors respectively in the Dept. of Agricultural Economics and Business, University of Guelph. Lake is a policy analyst with the Ontario Government Ministry of Finance,

Abstract

As food companies become larger and more global there has been concern about the ability of small and medium-sized food processors to survive. However, in Canada, many medium-sized food processors are not only surviving, they are thriving. It has been hypothesized that the reason for their success has been their greater flexibility.

This paper examines the types of flexibility possessed by successful medium-sized Canadian food processing companies and the role of flexibility in their success. Using five case studies, the study concluded that flexibility is essential to the success of the firms studied, but that its form can vary. Strategic flexibility is not a critical success factor for these firms, but played a key role in the success of at least two firms. Operational flexibility is vital to all firms and it takes on two forms, production flexibility and product flexibility or innovation.

1. Introduction

Nearly all research on the competitiveness of Canada's food processing industry has been focused at the industry level instead of its building blocks – the individual food processing companies that comprise the industry (Martin et, al, 1991, van Duren et al 1991, Hazeldine and Feely 1991). The many industry level studies have lead to a number of contradictory findings around the competitiveness of different Canadian agricultural industries (Coffin et. al 1993). These studies were not able to examine the competitiveness of individual firms. However, both government and industry stakeholders are interested in the roots of the industry's competitiveness (or lack of it), firm level performance and the reasons for their success or failure. The need for this type of research has also been recognized by strategic management researchers, who have found that internal factors and serendipity account for 80 to 90 percent of a firm's performance, while external factors explain only 10 to 20 percent (Schmalensee, 1985: Hansen and Wernerfelt, 1989; Mehra, 1996; Roquebert, Phillips and Westfsall, 1996).

Several anecdotal explanations for the Canadian agrifood industry's competitiveness at the firm level have emerged over the last decade, with the most popular being that "Canadian food processing companies are successful because they are far more flexible than their multinational competitors" (Martin, 1995). Upton (1994) describes flexibility as "the ability to change or react with little penalty in time, effort, cost or performance."² This paper examines the validity of the hypothesis that "Canadian food processors are flexible" through case studies of successful, medium sized, Canadian owned firms. To keep the scope of the research manageable, the study does not examine the relative flexibility of Canadian owned food processing companies and multinationals, and it also does not examine the relative flexibility of successful and non-successful Canadian owned firms. Rather the focus of this paper is to examine the validity of the "flexibility hypothesis" by developing a deeper understanding of the components of flexibility, how it has been created in the case study companies and its role in the success of these companies.

The paper is organized as follows. Section 2 presents a review of the relevant literature. Section 3 explains our case study research approach. Results presented in section 4 are analyzed in Section 5. Section 6 presents conclusions, implications and suggestions for further research.

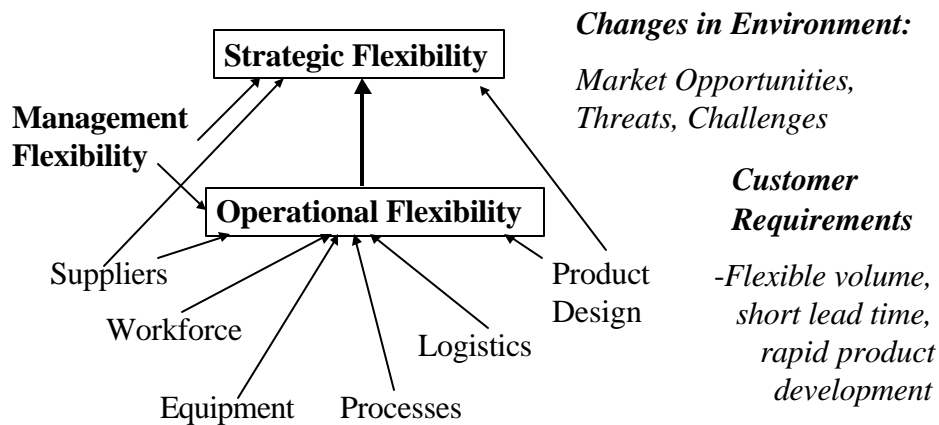
2. Literature Review

The concept of flexibility and its role in organizational success has challenged managers for the last two decades. Upton (1994) characterizes flexibility by the dimensions over which flexibility is required, the time horizon and the elements of flexibility most important to the firm. Organizations exhibit flexibility at three levels, strategic, operational and individual function as illustrated in Figure 1. Flexibility at each

² David Upton, The Management of Manufacturing Flexibility, *California Management Review*, Winter 1994, page 73.

level builds on the flexibility and capabilities of the level around it. Strategic flexibility is concerned with the ability of a firm to respond to changes in its environment, while operating flexibility deals with internal flexibility that allows a firm to meet customer needs for quick delivery and development. Operating flexibility is facilitated through flexibility in the different aspects of a firm's production system. Factors like innovation and product design, as well as flexible suppliers, may support both levels of flexibility.

Figure 1. Elements of Flexibility



Strategic Flexibility: Hitts, Keats and DeMarie (1998) provide the most comprehensive definition of strategic flexibility - a firm's capability to proact or respond quickly to changing competitive conditions and thereby develop and/or maintain competitive advantage. Firms with strategic flexibility can react quickly to seize opportunities or to adapt to new challenges or threats changing an organization's strategic direction, product-market strategy, competitive premise or business-system to remain competitive. Since changes in one component of strategy typically involve changes to the other components in order to retain internal consistency, strategic flexibility may be the most difficult to achieve.

Strategic flexibility is a theme being explored by strategic management researchers who focus on strategy under uncertainty. The theory of real options suggests that organizations, which operate under uncertainty, create strategic flexibility by creating/developing real options that they can trigger if they need to change course quickly (Courtney et. al 1999). Firms exhibiting strategic flexibility rely on an adaptable management team and the ability of corporate operations to support shifts in strategic direction.

A significant contributing factor to strategic flexibility is management flexibility and responsiveness. Organizations that can assimilate market and competitive intelligence,

and act quickly to decisions based on that intelligence are at a competitive advantage compared to slower and more bureaucratic organizations.

Operational Flexibility: The term flexibility is used most often to refer to some aspect of operational, or manufacturing, flexibility. This flexibility has several components. Product mix flexibility refers to the firm's ability to handle a wide range of products (Gerwin, 1993). Volume flexibility refers to adjusting production volumes without adverse effects on efficiency and quality (Gerwin, 1993). New product flexibility deals with the ability of firms to rapidly design and manufacture new products. Miltenburg (1995) divides operational flexibility into those activities associated with existing products, which he refers to as flexibility, and those activities associated with the introduction of new products and design changes, or with the redesign of existing products, which he termed innovativeness. In this study, flexibility associated with the introduction of new products is referred to as innovation and product development and is evaluated as a distinct aspect of operational flexibility. Baldwin and Sabourin (1999) examined innovation in Canadian food processing companies and concluded that process innovation is positively correlated with size while product innovation is most significant among medium sized firms. Firms may achieve competitive advantage through one or both types of operational flexibility. For a further review of flexibility literature, see for example, Gupta and Somers, 1996.

Supporting Flexibilities: Mix, volume and product flexibility are outcomes resulting from the development of flexibility in different functional areas. Operational flexibility is achieved through combinations of flexible equipment (Boyer and Leung, 1996), a flexible workforce (Kathuria and Partovi, 1999), responsive supply chain partners who can adjust products and deliveries in response to changing requirements (Volberta, 1996), and adaptable processes (D'Sousa and Williams, 2000). Financial flexibility has been of concern to organizations for some time and is increasingly being recognized as a significant contributor to the ability of a firm to adapt to changing environmental conditions. Product flexibility is achieved by developing research and development capabilities and working closely with customers and suppliers. The concept of flexibility expanding beyond organizational borders into supply chains is relatively recent. Tyndall et al. (1998) refer to flexibility as having three components, supply chain capacity, operations capabilities and management's will to change. Simchi-Levi et al. (2000) discuss the impact of third party logistics on the level of supply chain flexibility. Alliances and relationships are included in our analysis since interactions with other organizations may affect flexibility positively or negatively.

The Value of Flexibility: A common tenant of modern strategic management is that a flexible firm creates shareholder value through the intrinsic workings of real options. Plant capacity, product design, production processes, equipment, employees and suppliers all impose constraints on a firm. Those constraints may impose opportunity costs on the organization; limited product lines restrict market opportunities and production, employee or supplier limitations may cause the firm to turn away or lose orders due to an inability to respond rapidly to changing customer needs. Flexibility relaxes organizational constraints and provides the organization with real options to

irreversible decisions on capacity or production. Flexibility allows the deferral of decisions to commit production resources to particular products or customers. Such real options create value, since they provide management with the right, but not the obligation, to make some (at least partially) irreversible decisions in the future (Dixit and Pindyck, 1995, Amram and Kulatilaka, 1999). The ability to defer decisions until the degree of uncertainty is reduced provides demonstrable value to a firm.

The ultimate value of flexibility depends on the firm's environment and on the nature of flexibility. Industries with high demand uncertainty will value product or production flexibility, while industries with a rapidly changing environment will place a premium on strategic flexibility. However, Swamidass and Newell (1978) found a positive correlation between manufacturing flexibility and global performance in both stable and uncertain environments

An important factor in developing and capturing the full value of flexibility is innovation in products, processes and strategy. Zahra et al. (1993) examined the linkages between innovation management in manufacturing and financial performance, concluding that there was a positive correlation between internal innovation and performance. They also found a negative correlation between external innovation and performance, and hypothesized that firms which choose to purchase innovation by buying companies, ideas or products may select incorrectly, pay too much for that innovation, fail to integrate the innovations adequately or underestimate the time needed to secure the benefits.

3. Case Research Approach

Since our research focus is to develop a deeper understanding of the role of flexibility and how it has been created in food processing companies, case study research is appropriate. Our discussion of the case research methods used in this study follows the structure suggested by Yin (1994, pp. 18-53) and is organized into a discussion of:

- (2.1) the study's questions,
- (2.2) the propositions being examined,
- (2.3) the units used in the analysis, and,
- (2.4) how we developed the data and how it was used to examine propositions.

3.1 Case Study Questions

The central question addressed in our research is "what is the nature of the flexibility in medium sized successful Canadian food processing firms and is it essential to their success?" In particular, what aspects of strategic flexibility and operational flexibility are present in the case study firms, and how do they contribute to firm competitiveness?

3.2 Case Study Propositions

The propositions of the study follow from its central question. The propositions are as follows.

Proposition 1: Flexibility plays an important role in the competitive strategy of successful medium sized Canadian food processing companies.

Proposition 2: Successful medium sized Canadian food processors possess aspects of strategic flexibility.

Proposition 3: Successful medium sized Canadian food processors possess aspects of operating flexibility.

We expect that flexible firms will possess aspects of each type of flexibility, but that those aspects will vary by firm.

Proposition 4: Strategic flexibility and operating flexibility are interrelated, but the direction and nature of this interrelationship is expected to vary by firm. We expect that the direction and nature of the relationships will vary by firm, and the perception of those relationships may vary by the functional role of the manager interviewed.

Proposition 5: Strategic or operational flexibility must be supported by flexibility in management and other internal functions.

Proposition 6: Strategic alliances or relationships with governments, other business and industry associations are important to promoting flexibility, of any type.

Proposition 7: Flexibility, according to any or all of the aspects examined in propositions one through four, is a core competency of medium sized Canadian food processors. In order for an organizational capability to be considered a core competency it must meet four criteria; it must something the organization does better than its competition, valuable, extendable into other products or markets and it must be inimitable, difficult to imitate (Prahalad and Hamel, 1990).

3.3 Units of Analysis

Our research examines the flexibility propositions at several levels: individual manager, firm and then across all the case study firms. Each of the propositions is examined from the perspective of fifteen individual managers in the five case study firms. At the firm level, the responses of managers within each company are assessed for general content, differences and similarities. At the highest level, the five firms are assumed to be representative of medium sized Canadian food processors, the responses of all fifteen managers of the five case study firms are assessed for general content, differences and similarities.

3.4 Data Collection and Proposition Examination

The data used in the study were collected through a literature review on the case study companies and interviews with three managers in each of the case study companies³.

3.5.1 Selection of Appropriate Case Study Companies

Determining suitable companies for the research and obtaining their cooperation was the major challenge. Companies to be included in the study had to meet the following criteria: (1) small to medium-sized, (2) Canadian-owned, (3) successful, and (4) independent⁴. Cooperatives were excluded due to the additional issues that might be relevant to success.

The case study companies were selected through a multi-step process. Initial screening through trade magazines and trade associations developed a list of candidate companies that appeared to meet the criteria listed above. A second candidate list was developed through interviews with four consultants who specialized in the agrifood sector. In the third step, financial performance information from four industry benchmarking studies⁵ was employed to determine which companies selected in steps one and two met financial success criteria. These criteria comprised the following performance benchmarks: double digit sales growth over at least three years plus positive ROI, ROA and ROS.⁶ For four of the eight companies selected in steps one and two, this information was available from public records, while for the remainder it was obtained from a senior manager in the private company.

The final criterion was that management had to be accessible and open to the commitment for intensive access required by the researchers. In each company, three senior managers had to commit to an in-depth interview taking at minimum an hour-and-a-half. Table 1 provides a basic description of our case study firms, a brief description of their strategies and the positions of the three senior managers from whom the case study data were obtained. Selecting and obtaining companies to participate in the study was challenging since very few potential candidate firms were willing to share their financial data or commit three senior managers to sharing strategic information. This hesitation in sharing data key to our study also explains why the companies are not

³ In one of the companies, one senior manager was not interviewed since he/she was not available at the time the others interviews company were conducted (at considerable travel expense). This manager did complete the assessment of his/her own company's performance and that of its competitors.

⁴ Independence is often goal of management, owners and public policy, particularly in Canada's agrifood sector.

⁵ The four benchmarking studies are: (1) Statistics Canada Cat. No. 61-008-XPB, (2) Financial Post, Investor Reports (1995-1997), Historical Reports (1996), (3) Deloitte and Touche Consulting Groups (1997) Benchmarking for Success: Five Year Financial Performance Trends for Canadian and United States Food Processors, and, (4) Turvey, C. et. al. (2000) "The Relationship Between Economic Value Added and the Stock Market Performance of Agribusiness Firms: Agribusiness: An International Journal (Vol. 16 No. 4, pp. 399-416).

⁶ At this point we removed three companies because they were cooperatives. Of the 45 private companies contacted, only seven were willing to provide verifiable financial data.

identified by name in the paper and why some data are aggregated more than they ideally would be.

3.5.2 Case Interviews

For four of the five case studies, interviews with three senior managers were conducted during 1998 and 1999. In the last company, only two managers were interviewed. With the exception of two interviews, two interviewers were used for the fifteen interviews.⁷ In all of the companies, the company president chose the other managers to be interviewed. In every case, the most senior person responsible for an area in that company was selected, although formal job titles varied(see Table 1). Each interview was structured into three sections.

Background: Managers were asked to describe their role in their companies, their perception of factors that were critical to success in the industry and how these might change in the next five to ten years. This section was designed to obtain managers' interpretations of factors of particular importance to success in the food processing industry and an understanding of their responsibilities and attitudes.

Open-Ended Questions on Strengths/Competencies: Managers were asked to identify activities that their companies did exceptionally well relative to the competition, how their companies had supported those activities. Managers were also asked about the relevance of these factors in the future. The questions in this section focused on identification of strengths and how and why those strengths had been created in the case company. This portion of the interview was open-ended since we wanted to obtain managers' perceptions and ideas in an unstructured manner. It provided the most detailed and insightful data for the research.

Self-Performance Evaluation Survey: In the third part of the interview, each manager was asked to rate the performance of his/her company on a set of internal business activities, reputation, relationships with various organizations, as well as on an overall basis. The factors used in the evaluation of a company's own performance and the performance of its competitors were developed from a literature review on core competencies. All were rated on a ten-point scale, ranging from poor to excellent. Managers received this survey and other parts of the interview guide at least one week before the interview. Managers had completed this evaluation and were ready to report and discuss their perceptions. This part of the interview was used to ensure that managers rated their companies on factors that were potentially relevant to the study if they had not discussed them previously. It also provided an opportunity for consistency checks.

⁷ Two sets of interviews had to be conducted at considerable travel expense, so it was only possible to send one interviewer.

Table 1: Case Study Company Descriptions

Factors	Companies				
	A	B	C	D	E
Sales (C\$ mil)	20	40	30	50	10
Head Office Location	Ontario	Ontario	Ontario	B.C.	B.C.
Ownership	Private	Private	Private	Private	public
Employees	80	200	159	200	150
Union	No	No	No	No	No
Management	Family/ Professional	Family/ Professional	Family/ Professional	Owner/ Professional	Owner/ Professional
Market – Geographic	Canada, U.S.	Canada, U.S.	Canada, U.S in past	Canada, U.S., other countries	Canada, U.S., other countries
Markets -	Retail, food service, health institutions	Retail, food service	Retail, food service	Retail, food service	Retail, food service
Market – Product	Brand, private label	Brand, private label	Brand, private label	Brand, minor private label	Brand, very minor private label
Growth Objectives	15 %/ year	\$200 million in sales by 2003	Yes, would not indicate precisely	Yes, would not indicate precisely	\$100 million in sales by 2000
Recent Years' sales Growth	15%	> 10%	>10%	>10%	50% (with acquisitions)
Goals	Growth, compete in the U.S.	\$200 sales by 2003, develop critical mass to compete globally in convenient food	Growth, ensure that our buyers never change suppliers	Be global, create innovative products for a healthy lifestyle	Be an international specialty food processing company
Competitive Premise	Be the most flexible, do the most difficult products – quickly, work with the best customers	Pick the best customers and partner and commit deeply, for the long run; define quality	Continue investment in people and technology to drive down costs	Develop and execute the best taste, price and marketing in the industry	Find the niches and beat everyone out of them
Interviewees	President, Marketing Manager, Operations Manager	President, Divisional V.P., Human Resource Manager	President, Controller, Human Resource Manager	President, V.P of Sales and Marketing, V.P of Technical Service	President, V.P of Sales and Marketing, Chief Financial Officer

Competitor Evaluation Survey: In the third part of the interview each manager was also asked to rate his/her company relative to its most important competitors on the same set of factors as for the self-performance evaluation. A ten-point scale was used, but scoring ranged from performing an activity at a level “less than” through equal to” and “better than” the competition. This final part of the interview was designed to obtain data on competitive superiority, and to allow the researcher to assess consistency between data obtained from the open-ended questions and the scaled evaluation.

3.5.3 Case Analysis

Individual case analyses were written after the interviews for each company, and then followed by a cross-case analysis after completion of all interviews.⁸ Each of the case studies was approximately 50 pages and examined the components of the company’s strategy and its managers’ perceptions and analysis of critical success factors, external factors (particularly the competition), managerial attitudes and company’s strengths. For activities that were explicitly defined as components of flexibility or could be interpreted as aspects of flexibility based on managers’ responses in the open-ended portion of the interview, the criteria for core competency were also applied. These factors were checked against the managers’ rating of their own company’s performance and relative to the competition. Based on responses from the self-performance and competitor evaluation survey a factor had to be; (1) ranked in the top three strengths by all managers in a case study company, and (2) all managers in the company had to rank their company as superior to the competition to be considered a core competency. The cross-case analysis consisted of examining differences and similarities across and within companies based on the individual case analysis reports.

Part of the cross-case analysis used the scaled evaluation, in which managers scored their own-company’s performance and their best competitors’ on several resources and capabilities on a scale from 1 (minimum) to 10 (maximum). Vickery et al. (1994) found a high correlation between self-assessment and actual performance, a result consistent with earlier studies (Dess and Robinson (1984) and Venkatraman and Ramanujam (1986). Managers of these successful firms tended to rate their companies relatively high on most of the dimensions. In order to better compare the results, the scores for each manager were used to rank the performance factors, ranging from 1 to 20. In the case of ties, all factors received the highest ranking. For example in the case of three ties for first place, each of the tied factors received a score of 1 and the next factor would begin at a score of 4. The rankings for individual managers were then averaged by firm to obtain firm rankings of the factors. Finally, the average ranking for all five firms was calculated for each performance factor.

⁸ An excellent source for methods and procedures involved in case study research is Yin.R.K. Case Study Research: Design and Methods, Second Edition. Applied Social Research Methods, Volume 5. (Sage Publications: Thousand Oaks, CA, 1994)

4. Results and Analysis

4.1 Critical Success Factors

When asked about critical success factors in food processing, the managers of medium sized processing firms made a clear distinction between the roles of small to medium sized processing firms compared to large firms and what it takes to be successful for each. Large firms tend to succeed through dominance of the larger market segments, with branded products produced in large volumes to minimize costs of production and price. According to the managers interviewed, medium sized firms must be able to differentiate themselves from these large competitors. They accomplish this by identifying market niches where they can provide with unique products or services. This strategy came across clearly when managers were asked to identify the critical success factors (CSFs) for food processing firms. The thirty-eight responses given by the managers are shown in Table 2.

Table 2. Critical Success Factors For Canadian Food Processing Firms

Critical Success Factor	Number of Responses
Product innovation, research and development	9
Price and cost management	7
Quality	6
Flexibility	4
Customer Service	4
Identifying Niches	4
Management	2
Public Relations	1
Packaging	1

Several points related to CSFs were evident in both the answers to industry CSFs (Table 2) and the broader interviews. To operate in the food processing industry a firm had to meet three basic criteria:

1. Cost – Managers in each firm indicated that controlling costs is imperative to success in the food processing business. To some managers price was assumed to be a market entry criterion and not really considered as a success factor. Managers felt “If the price isn’t right, my firm won’t be in the business.”
2. Quality – Consistency in the level of quality and adherence to food safety standards and implementation of food safety systems like HACCP are essential to customers.
3. Service – 97% - 99% fill rates were frequently noted as being essential to staying in business. These had risen considerably from earlier years.

Under performing in any of these areas could put a company out of the market. However, to be truly successful, firms either had to excel in one or more of these factors

or find other ways to compete. According to the managers, in large food corporations, success is often achieved through economies of scale, superlative marketing and/or dominance of the brand label market. Smaller Canadian companies have neither the scale nor resources to compete with large competitors on scale or brand dominance. Their managers cited innovation, flexibility and identification of niches as vital to medium sized firm success. The five firms also were involved to varying degrees in private label products, using the branding capabilities of the retail chains to enable their products to compete with the brands of large food processing companies.

4.2 Areas In Which Individual Firms Excelled

Managers were asked to identify three areas where their firms excelled. The forty-four responses from the fourteen managers categorized in Table 3. Product flexibility ranked the highest, while production flexibility ranked lower. Four of the seven references to management, people and planning appeared to be specifically associated with strategic flexibility.

Table 3. Areas of Competence for The Five Food Processing Firms

Area of Competence	Number of Responses
Product innovation, research and development	10
Management, people and planning discipline	7
Price and cost management	5
Flexibility	5
Customer Relationships and service	5
Quality	4
Market Knowledge and marketing	3
Culture	1
Financial Management	1
Diversified Sales	1
Public Relations	1
Packaging	1

4.3 Self Assessment

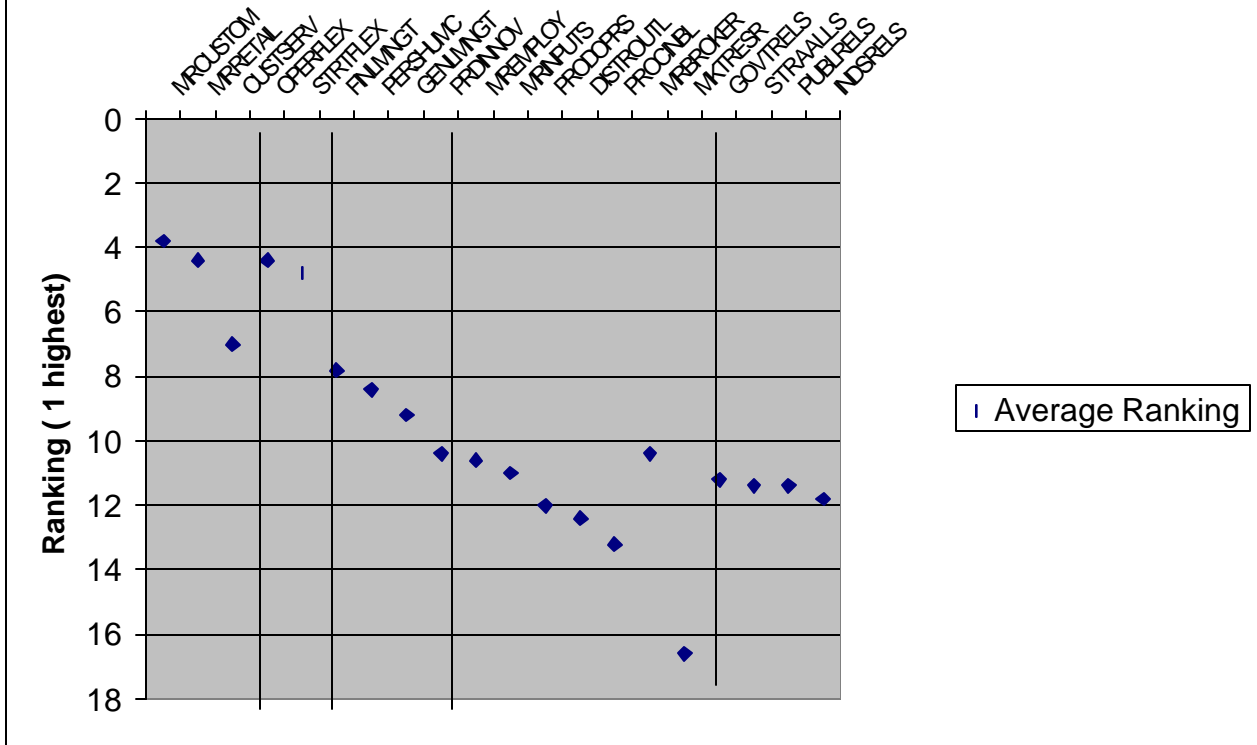
Examining the results of the self-assessment survey rankings further illuminates the factors contributing to the success of the five firms. To organize the numerous factors that contribute to a firm's success they have been grouped into five broad categories as follows.

1. Customer centered - As profit seeking ventures, the ability of a firm to interact with its customers should be a principle factor in its success. Successful firms should recognize this and should be superior to their competition.

2. Strategic and Operational Flexibility - An organizations survival depends on its ability to adapt to changes in its environment, markets and customer needs. This adaptability will depend on both the strategic flexibility and operational flexibility of the firm.
3. Management Capabilities - To achieve strategic and operational flexibility organizations must develop management capabilities in general and operational management, financial management and management of the human resources of the firm.
4. Support Activities - Several factors may be considered as supporting factors, in themselves they are not sufficient to provide a competitive advantage but they can be components of operational flexibility.
5. Relationships - In addition to relating to customers firms may also achieve an advantage through their ability to relate and interact with other organizations in the firm's environment.

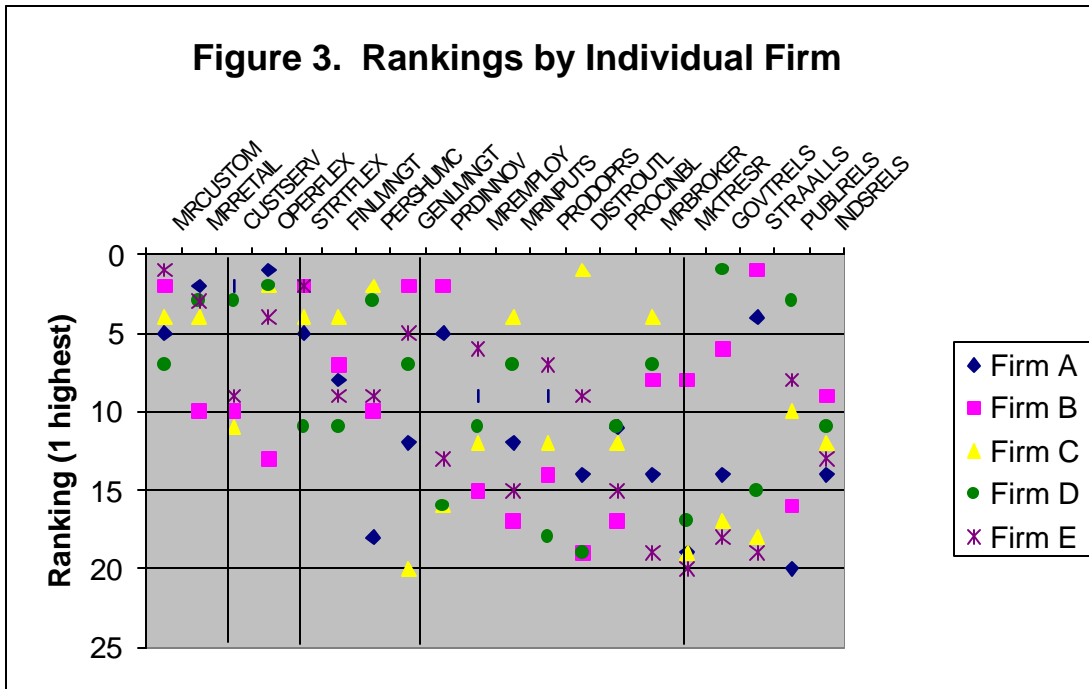
The different factors were ranked according to the average score across the managers of each firm. Figure 2 contains the average ranking of the different performance factors across all five firms. The performance factors are divided into the five categories described above. The average rankings for the individual firms across their three managers may be seen in Figure 3. While the broad trends are apparent in the aggregate data, the individual firm data displays considerable variability in rankings of the different factors. This variability is even more pronounced across different managers.

Figure 2. Average Ranking For All Five Firms



Legend:

- MRCUSTOM – managing customer relations
- MRRETAIL – managing relationships with retail organizations
- CUSTSERV – customer service
- OPERFLEX – operating flexibility
- STRATFLEX – strategic flexibility
- FINLMGMT – financial management
- PERSHUMC – personnel management
- GENLMNGT – general management
- PRDINNOV – product innovation
- MREMPLOY – managing employee relations
- MRINPUTS – managing inputs
- PRODOPRS – production and operations
- DISTOUTL – distribution and outbound logistics
- PROCINBL – procurement and inbound logistics
- MRBROKER – managing broker relationships
- MRKTRESR – market research
- GOVTRELS – government relations
- STRAALLS – strategic alliances
- PUBLRELS – public relations
- INDSRELS – industry relations



4.4 Analysis

One of the most significant observations that may be drawn from the self-assessment data and the interviews is the importance that these firms place on managing customer service and relationships. For the managers interviewed, their firm's ability to compete depends on its proficiency in satisfying its customers. These food-processing firms view both retail organizations and the ultimate consumer as their customers. All five firms recognized the importance of their relations with their customers and were cognizant of the role that being better than their competition has played in their success.

To manage their customers these firms had to understand and meet the needs of a variety of customers. Most customers were domestic, although four of the five firms were aggressively expanding sales into the U.S. market. The customers were predominantly retail chains, with a percentage of the sales in private label products. However, food service, health care and club stores were included. Meeting customer needs required different aspects of flexibility. Managers in every firm discussed the need to respond to short customer lead times on orders. Order fulfillment within 2-7 days was a fairly common requirement for all of the companies. The managers in each company also identified the rapid development of new products as another customer requirement. The managers made a very clear distinction between operational flexibility related to production flexibility and innovation and research and development related to product flexibility. It was interesting to note the impact that a single retail organization, Loblaws, has had on the latter aspect of the Canadian food industry. Several of the firms were involved in the development and production of Loblaws President's Choice brand of products. The firms involved in these products learned to work closely with

both the customer and suppliers to rapidly develop new products that met strict standards of cost, quality and innovation. These firms were then able to translate their development systems and experiences into successful branded or private label products for other chains.

The propositions provided in Section 3.2 will now be examined.

Proposition 1: Flexibility plays an important role in the competitive strategy of successful medium sized Canadian food processing companies.

The evidence from both the interviews and self-assessment surveys strongly supports this proposition. In every company one or more managers indicated that flexibility in operations, product development or strategy played a role their firm's success. In the self-assessment survey all managers rated their company above the competition on at least one of strategic or operational flexibility, with eleven of fifteen managers rating their firm better on both. In companies A to D, every manager interviewed cited flexibility or innovation in product development as areas where their firms excelled. In company E, one manager cited product flexibility as an important factor in their success while the other felt that they hadn't achieved the level that they would like to. From the discussions and activities of the corporation, it was apparent company E's success was related more to its strategic flexibility than operational flexibility.

Proposition 2: Successful medium sized Canadian food processors possess aspects of strategic flexibility.

Managers were asked to rank their own companies on strategic flexibility. There was some confusion as to the definition of strategic flexibility. Many managers associated excellent customer service and innovation, either in products or business practices, with strategic flexibility and tended to rate their firms highly on strategic flexibility. A better interpretation is that strategic flexibility results from being able to identify opportunities or risks in the environment, having a system which is flexible enough to respond to those opportunities and having the management capable of implementing the response. Evidence of such flexibility was limited. In one of the case study companies, not all managers who were interviewed rate themselves as superior to the competition. Therefore, although strategic flexibility is an area of strength in some companies, it does not meet the criteria for being a core competency in at least one of the companies (based on the competitive superiority criteria).

In the interviews, strategic flexibility as a key competitive factor was only really apparent in two of the companies. Both firms ranked their strategic flexibility above their operating flexibility. Company B associated strategic flexibility with being able to change, as the market requires. After the Canada-U.S. Trade Agreement and the North American Free Trade Agreement were passed, it refocused its business on the premium frozen foods niche, while keeping involved in the low end of the frozen market of the market as well. It deliberately abandoned the middle of the market, which was well served by multinationals that have scale and mass-marketing advantages.

Company E's business model was its main source of strategic flexibility. Its network of companies was developed through acquiring small companies with good products and management with expertise in selected niches of the food market, but without the capital and/or general management skills to continue to grow their businesses. One of Company E's acquisitions was completed with the objective of acquiring product development capabilities. They were then in a position to distribute those capabilities to other subsidiaries.

Most of the other companies had clearly defined target market segments and while they appeared flexible within those segments, with one or two exceptions, they remained in those segments. Company D exhibited aspects of strategic flexibility by extending its product offerings into new markets but remained within its chosen niche. For those companies, focus on specific niches and customers was more important than strategic flexibility in contributing to success. Therefore, while strategic flexibility has played a role in the success of some medium sized Canadian food processors, proposition 2 is rejected, as it is not an essential factor in the success of all firms in the sample.

Proposition 3: Successful medium sized Canadian food processors possess aspects of operating flexibility.

Managers had several interpretations of operational flexibility, but nearly all managers in the case study companies considered speed of customer service and the ability to produce different products on short notice key aspects. Processing equipment and plant layout are designed to allow flexibility and involvement in new product development and process improvement from the work force. Managers' rankings of their own companies' operational flexibility was high for four of the five companies (Figure 3). Company B rated it lower (in 13th place) attributing its success to building better relationships with its partners. However, in discussions management felt that a significant factor in their success was the flexibility of their production system, which allowed smaller runs and faster changeovers, as well as more output from their equipment.

Managers also distinguished between their flexibility relative to large processors or other small processors. There appeared to be unanimous agreement that their firms were more flexible than large food processing companies and that their relative flexibility was one factor that allowed them to exploit markets not occupied by the larger firms. When compared to other small to medium processors, the managers were not all sure that their firms were more flexible. However, in all but one of the companies all managers rated their own company's performance as superior to the competition.

For most firms operational flexibility related to activities within individual plants. Company E developed a network of "plants" to provide operational flexibility across the company as a whole. It is part of their strategy to have more, smaller plants closer to major population centers, which fits with their strategy of serving several market niches.

If product flexibility is included in the definition of operating flexibility then all firms definitely exhibited one or both aspects of operating flexibility. In both the critical success factor (9/38 responses) and areas of competency responses (10/44 responses), product innovation and R&D came out as the most important factor. It also ranked highly in the self-assessment results. These firms succeed through their ability to both develop and deliver a variety of new products in a short period of time and in small volumes, compared to large food processing competitors. As shown in Figure 1, product innovation supports both strategic and operating flexibility.

Company A's managers unanimously rated product innovation as a critical success factor and designed their business system to support it, including their human resources policies, relationships with customers and membership of their senior management team. Company B placed similarly high emphasis on innovation, but defined it more broadly or strategically, as "innovation is doing anything that matters differently". They emphasized that good relationships with customers drive innovation and change. They manage their relationships with business partners to involve many of their employees so that everyone is closer to the customer and can benefit from more direct knowledge and motivation. Company C recognized the importance of innovation, but admitted that it was falling behind on this business function. Company D aimed to set the pace for change in its product categories, through constant invention of new product and products and constant selling. Company E also recognized the importance of innovation and the need for new knowledge to support that innovation and has been building its network of companies and management in order to expand the variety of new products it offers in the market. Managers in all of the firms recognized that improvements to the innovation/product development function were needed on an ongoing basis and were constantly striving to improve performance.

Proposition 3 is accepted, as managers in all of the firms recognize and nurture a combination of production flexibility and innovation as a key component of their competitive strategy.

Proposition 4: Strategic flexibility and operating flexibility are interrelated, but the direction and nature of this interrelationship is expected to vary by firm.

The relationship between strategic and operational flexibility in the firms was looser than anticipated. Two of the firms (A and C) exhibited strong degrees of operational flexibility with less evidence of strategic flexibility. All managers of those firms recognized this. Of the three firms exhibiting strategic flexibility, based on both management perception and analysis of corporate activities, two also exhibited high levels of operating flexibility, while operating flexibility appeared somewhat less pronounced in the last firm. In Firm B all managers rated strategic flexibility higher than operational flexibility, while in Firm D, the reverse occurred. Company D aimed for a synergistic relationship between operational and strategic flexibility. As its owner stated "... It's all about keeping pace. It's all about creating change." This company has a very high proportion of its people involved in research and development, which is aimed at developing products the market has never seen before. They invent and sell on a constant basis, and consider

their real competition to be similar niche companies on a global basis. Their view of operational flexibility is closer to strategic flexibility. Results in Firm E were mixed. While strategic flexibility has been essential to the firm's success, operational flexibility was never discussed beyond new product innovation and in that respect Company E felt that they were only coming up to speed. However, managers in Company E did rate their operational flexibility highly in the self-assessment scores.

From these results we conclude that it is possible to have operational flexibility without strategic flexibility, but that the converse appears unlikely; operational flexibility is an important supporting factor to strategic flexibility. Intuitively, this makes sense in medium sized firms where resources are limited. A flexible production system is required to take advantage of new market opportunities, as it is not possible for these firms to easily buy and sell assets needed to adjust to changes in their environment. There appeared to be tradeoffs in strategic and operating flexibility. Managers in company A realize that too much emphasis on providing operational flexibility to improve customer service affects strategic flexibility. While company A's major aims continued to focus on improving operational flexibility, company B is willing to sacrifice some operational flexibility for the sake of more strategic flexibility. Company E has been using its strategic flexibility in order to improve its operational flexibility. These examples provide additional support for the concept that these companies recognize the importance of flexibility to their long-term competitiveness.

We accept the proposition that strategic and operating flexibility are interrelated but reject the idea that a specific form of the relationship can be defined for all firms. Operating flexibility can support strategic flexibility, but for these medium sized firms there appear to be tradeoffs between the two.

Proposition 5: Strategic or operating flexibility must be supported by flexibility in management and other internal functions.

While it is possible to support this general statement from the five case studies, it is impossible to show that a particular combination of supporting elements is necessary or sufficient to produce either operational or strategic flexibility. An examination of the firm rankings in Figure 3 on supporting management and functions shows that each firm appears to have its unique combination that results in the desired types and levels of flexibility.

In the interviews, the flexibility of the personnel came across as a necessary condition for both operational and strategic flexibility, but the roles and impact of personnel varied depending on the nature of flexibility required. Companies with strategic flexibility cited the importance of their management team in creating that flexibility. Company A, B and C's managers made statements such as "flexibility and innovation come from our people", and "our plant people have ideas on how to set up equipment for new product development". In one company, managerial willingness to develop difficult products in a short time frame by working closely with the customer was made possible by the flexibility in the labour force. A non-unionized labour force composed of many

nationalities supported variable work hours, as well as providing insight into ethnic food trends. The contribution of personnel to innovation cannot be overstated. The abilities of the labour force also supported this company's approach to automation. Since its products are targeted at market niches, with small production runs, aspects of production were not automated. As one manager stated "people are more flexible, precise and can learn faster than machines". Managers in more than one company discussed the role of production layouts and use of flexible, multi-purpose equipment to provide production flexibility.

Proposition 5 is accepted but like proposition 4 above, there is no one formula for flexibility. However, some relationships are apparent. Firms seeking production flexibility invest in flexible equipment, multiple production lines and multi-skilled employees. Firms seeking innovation and product development invest in R&D and food science skills, and they work closely with customers. Firms seeking strategic flexibility must build a tight and adaptable management team.

Proposition 6: Strategic alliances or relationships with governments, other business and industry associations are important to promoting flexibility, of any type.

With the exception of strategic alliances with customers, most evident in Firms A and B, strategic relationships with other organizations played a relatively minor role in the success of the five firms. For companies A and B, strategic alliances with customers played a major role in product innovation, and hence product flexibility. These firms worked closely with customers to develop and improve product offerings. The other firms tended to rely on more traditional industry relationships for sourcing or product development ideas. These provided some value in promoting flexibility but were not a major corporate strength or priority.

Relationships with government might be expected to be important to the strategies or flexibility of food processing companies due to the degree and nature of government intervention in Canada's agrifood sector. This was the case for Firm D where government relations supported aspects of strategic flexibility, helping the company enter new markets. Generally, the case study companies managed their relationships with government to reduce the negative impacts of government policy – particularly the effects of supply management in the poultry and dairy industries. Several managers indicated that Canada's supply management systems for dairy and poultry products inhibited the degree of flexibility their companies were able to develop in these areas.

Proposition 6 is rejected as being important to promoting flexibility of any kind. There is evidence that relationships are important for some firms but not necessary for the success of all firms.

Proposition 7: Flexibility, according to any or all of the aspects examined in propositions one through four, is a core competency of medium sized Canadian food processors.

To be considered a core competency, a corporate strength must be superior to the competition, valuable, extendible and inimitable. Data obtained from the self-assessments were also used in the determination of whether a resource / capability met the core competency criteria. If all managers' evaluations of their own company's performance were higher than their ratings of their competitors, then a company was considered competitively superior. When this one criterion required for a core competency was present, we used information from the open-ended interview to assess the other criteria.

All managers rated their companies superior to their large competitors in terms of flexibility. Relative to smaller competitors they were less clear, although all but one rated on at least one aspect of flexibility. The value of flexibility in production and product development to customers was apparent in interviews, financial success and awards from customers and industry. To varying degrees, all of the firms had been able to extend their flexibility and product development capabilities into new products and new markets, particularly in the U.S. The criterion of inimitability is the hardest to uphold. While the flexibilities exhibited by the five firms would be more difficult or less attractive for a large firm to imitate, this was not the case for medium-sized competitors. Although the firms tended to produce different products, the general nature of their product lines and production, and the aspects of flexibility supporting them were, or could be, imitated by at least one other firm in the sample. In two firms, one manager said that their operating flexibility was only equal to their comparable competitors. Thus under the strictest interpretation of the definition of core competency, flexibility cannot be considered a core competency of medium sized Canadian food processors. Proposition 7 is rejected on this basis. However, the authors feel that few companies have strengths that would meet the strictest definition of core competencies.

6. Discussion and Conclusions

The results from the case-based analysis of the five firms strongly support the hypothesis that flexibility is an important competitive factor for medium-sized Canadian food processing companies.

- All of the firms in the study are considered successful in the competitive market.
- All exhibit relatively strong aspects of operating flexibility, either production or innovation.
- Two strongly exhibit strategic flexibility.
- Flexibility is one of the factors differentiating these firms from their large competitors.
- The managers of all companies recognize the importance of flexibility and make decisions designed to maintain or enhance different aspects of flexibility. These decisions relate to the people, equipment and management of the company.
- The five firms sought markets where they could take advantage of their flexibility and tended to avoid those where they had to compete on brand dominance or strictly on price.

According to the managers interviewed, the relationship between flexibility and success appears to exist for many other similar sized food processing firms.

The study also found that there is no single formula for success for medium sized Canadian food processing firms. Flexibility may be competitively employed in a variety of different ways. Strategic flexibility was a significant factor in the success of two firms, but was not vital to the success of the others. Operating flexibility, in either production or innovation was present in all of the firms, but the mixture and levels of the two varied from firm to firm. Operating flexibility appears to be an essential foundation for building a competitive medium-sized food processing organization.

Success through attention to customer needs is a theme that runs throughout the interviews. To serve their customers beyond the market qualifying requirements of price, quality and order fill rates, medium sized food processors appear to have relied on flexibility and innovation. As the demand for more variety and the need for smaller, more focused niches continues, flexibility will play an ever-increasing role in the survival and success of small and medium-sized food processing companies.

References

Amram, M. and N. Kulatilaka, 1999. *Real Options: Managing Strategic Investment in and Uncertain World*, Boston, Harvard Business School Press.

Baldwin, J. and D. Sabourin, 1999 "Innovative Activity in Canadian Food Processing Establishments: The Importance of Engineering Practices", Analytical Studies Branch – Research Paper Series, Statistics Canada.

Boyer, K. and G. K. Leung, 1996 *Manufacturing Flexibility at the Plant Level*, Omega, International Journal of Management Science, 24, 5: 495-510.

Coffin, G., B. Larue, M. Banik, and R. Westgren, 1993. "Competitiveness in the Canadian Food Industry", Canadian Journal of Agricultural Economics, Vol.41: 459-473.

Courtney, H., J. Kirkland and P. Viguerie, 1999. "Strategy Under Uncertainty" Pp. 1-31 in *Harvard Business Review on Managing Uncertainty*, Boston: Harvard Business School Press.

Dess, G. and R. Robinson, 1984. "Measuring Organizational Performance in the Absence of Objective Measures", *Strategic Management Research*, 5, 3: 265-273.

Dixit, A and R. Pyndick, 1995. *An Options Approach to Capital Investment*, Harvard Business Review, May-June: 105-115.

D'Sousa, D. and F. Williams, 2000. "Toward a Taxonomy of Manufacturing Flexibility Dimensions", *Journal of Operations Management*, 18: 577-593.

Gerwin, Donald, 1993. "Manufacturing Flexibility: A Strategic Perspective", *Management Science*, Vol.39, No.4: pp.395-410.

Gupta, Yash and Toni Somers, 1996. Business Strategy, Manufacturing Flexibility, and Organizational Performance Relationships: A Path Analysis Approach, *Production and Operations Management*, 5, 3: 204-233

Hansen, G.S. and B. Wernerfelt, 1989. "Determinants of firm performance: The relative importance of economic and organizational factors", *Strategic Management Journal*, Vol.10: 399-411.

Hazeldine, T. and D.J. Feely, 1991. "Productivity, Costs and Competitiveness of Canadian Food Manufacturing Industries", A final report to the Food Policy Task Force, Industry, Science and Technology Canada.

Hitt, M.A., B.W. Keats and S.M. DeMarie, 1998. "Navigating in the New Competitive Landscape: Building Strategic Flexibility and Competitive Advantage in the 21st Century", *Academy of Management Executive*, Vol.12, No.4: 22-42.

Kathuria, R. and F. Partovi, 1991. Workforce Management Practices for Manufacturing Flexibility, *Journal of Operations Management*, 18: 21-39.

Martin, L.J., E. van Duren, R.E. Westgren, and M. LeMaguer, 1991. "A Review of Ontario's Food Processing Industry", A study by the George Morris Centre for the Ontario Ministry of Agriculture, Food and Rural Affairs.

Martin, L.J., 1995, "Taking the Bull by the Horns: Reinventing the Canadian Agri-Food Sector: Installment III", *George Morris Centre Newsletter*, Guelph, Ontario, Winter.

Mehra, A., 1996. "Resource and market based determinants of performance in the U.S. Banking Industry", *Strategic Management Journal*, Vol.17: 307-322.

Miltenburg, John, 1995. *Manufacturing Strategy*, Portland: Productivity Press.

Tyndall, G., G. Christopher, W. Partsch and J. Kamauff, 1998. *Supercharging Supply Chains*, Toronto: John Wiley and Sons.

Prahalad, C.K. and G. Hamel, 1990. The Core Competencies of the Corporation, *Harvard Business Review*: 79-91.

Roquebert, J.A., R.L. Phillips and P.A. Westfall, 1996. "Markets vs. Management: What 'Drives' Profitability?", *Strategic Management Journal*, Vol.17: 653-664.

Schmalensee, R., 1985. "Do markets differ much?" *American Economic Review*, Vol.75, June 1985: 341-351.

Simchi-Levi, D., P. Kaminsky and E. Simchi-Levi, 2000. *Designing and Managing the Supply Chain*, Boston: Irwin McGraw-Hill.

Swamidass, P. and W. Newell, 1987. "Manufacturing Strategy, Environmental Uncertainty and Performance: A Path Analytic Model", *Management Science*, 33, 4: 509-524.

Upton, David, 1994. *The Management of Manufacturing Flexibility*, California Management Review, Winter, 72-89.

van Duren, E. and L. Martin, and Randall Westgren, 1991. "Assessing the Competitiveness of Canada's Agrifood Industry", *Canadian Journal of Agricultural Economics*, 39, 4: 727-738.

Venkatraman, N. and V. Ramanujam, 1986. "Measurement of Business Performance in the Absence of Objective Measures", *Strategic Management Review*. 11, 4: 801-814.

Vickery, S., C. Droge and R. Markland, 1994. Strategic Production Competence: Convergent, Discriminant and Predictive Validity, *Production and Operations Management*, 3, 4: 308-318.

Yin, R.K., 1994. *Case Study Research: Design and Methods (Second Edition)*, Thousand Oaks, CA, Sage Publications,.

Zahra, S. and S. Das, 1993. Innovation Strategy and Financial Performance in Manufacturing: An Empirical Study, *Production and Operations Management*, 2, 1: 15-37.