Summary of the Functional Foods and Nutraceuticals Survey

Agriculture and Agri-Food Canada   Agriculture et Agroalimentaire Canada

Canada

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Foreword

This report provides an overview of the Functional Food and Nutraceuticals (FFN) survey. The FFN survey was conducted by Statistics Canada on behalf of Agriculture and Agri-Food Canada. The objective of the survey was to produce new statistical information on the functional food and nutraceutical sector and a profile of firms engaged in functional and/or nutraceutical-related activities in Canada. The information obtained will be useful to government departments and agencies to assist policy development and to the academic community for research purposes. The information may also be used by businesses and trade associations for economic, market or industry performance analyses.

This report is meant to be a multi-purpose reference document to provide:

- an introduction to the FNN industry and to establish baseline indicators and measurements; and

- data which are hyperlinked to charts and figures to enable stakeholders and researches to download for further analysis.

It begins with a look at the structure of the Canadian FFN industry, then reviews the labour and capital inputs, the business relationships and intellectual property rights and ends with the impact of regulations in the Canadian FNN industry. Charts, figures and tables with brief accompanying texts are used to summarize the information and to provide baseline structure/performance indicators.

The report reveals that firms in the Canadian FNN industry are mostly made up of small Canadian controlled firms, with more firms engaged in nutraceutical activities than functional foods. Almost 90 percent of responding firms were engaged in partnerships or seeking partnerships. Trade secrets seem to be the most commonly used method to protect intellectual property. In general, most firms in the industry felt that the ability to use health claims on their FFN products would have a positive impact on both domestic and export sales.

Functional Foods and Nutraceuticals Survey Description

- **Survey purpose:**

  To produce first-ever information on companies in the Canadian functional food and nutraceutical (FFN) industry.

- **Respondents:**

  Senior managers of the companies involved in FFN activities.

- **Sample size:**

  Approximately 600 companies across Canada.

- **Number of total respondents:**

  276 respondents, which is a 48% overall response rate.

- **Number of respondents qualifying as FFN industry participants:**

  147 respondents, which is 53% of the total number of respondents.

- **Collection period:**

  Spring 2003.

What are functional foods and nutraceuticals?

Functional foods: are similar in appearance to, or are conventional foods demonstrated to have physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions.

Functional foods may be developed by adding active ingredients to basic food products (e.g., muffins with beta-glucan, foods with added soluble fibre, etc.) or by using special production techniques such as plant breeding, genetic modification and specialized feeding regimes (e.g., tomatoes with enhanced lycopene levels, omega-3 eggs, etc.)

Nutraceuticals: are products purified from foods that are generally sold in medicinal forms, such as powders, tablets or capsules, demonstrated to have physiological benefits or to provide protection against chronic disease.

Nutraceuticals can be derived from plants (e.g., antioxidants, echinacea, fenugreek, etc.), from animals and microorganisms (e.g. elk velvet, essential fatty acids, enzymes, etc.) and from marine sources (e.g., glucosamine, chitosan, fish oils, etc.).

Who makes-up the Canadian FFN Industry?

Firms involved in:

Scientific Research and Development (R&D)

Product Development / Scale Up

Ingredient Manufacturing

Consumer Product Manufacturing

Wholesaling

Technology Provision

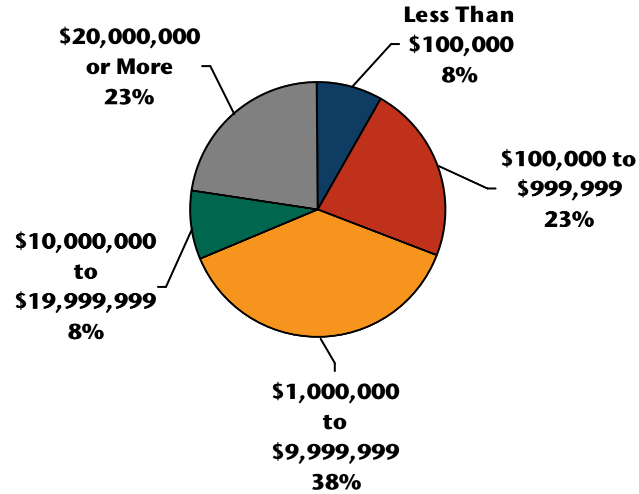
Structure of the Canadian FFN Industry

The majority of firms are small, but there are some large players in terms of both revenue and workforce size

- **Firms in the Canadian FFN industry vary widely in terms of total revenue.**

  Thirty percent of the firms reported total earnings from all sources exceeding $10 million in 2002, another 40% reported earnings between $1 to$10 million and the remaining 30% reported earnings of less than $1 million.

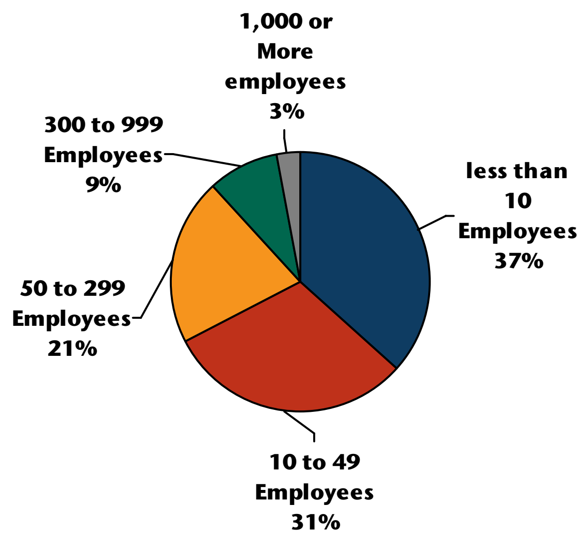
Chart 1
Distribution of FFN Firms by Total Revenue from All Sources, 2002



- **Two-thirds of the firms have only a small total workforce of less than 50 employees.**

  There are, however, a few large players with 4 firms (3%) reporting a total workforce of more than 1000 employees.

Chart 2
Distribution of FFN Firms by Total Number of Employees, 2002[1]



Note: 1) Includes permanent, seasonal, casual and contract employees.

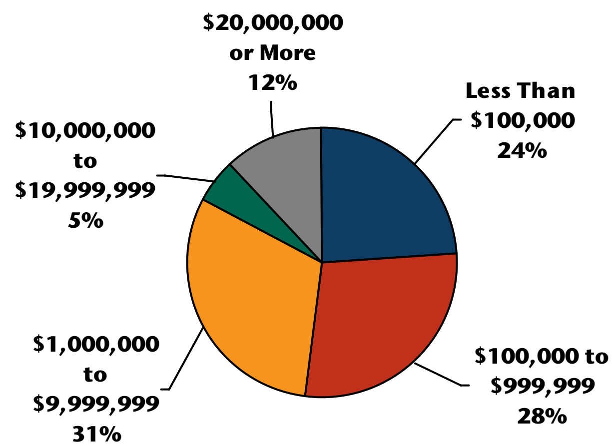
FFN-related activities account for a large portion of total revenue and employment in some firms

- **Twenty-six firms (17%) reported FFN-related revenues exceeding $10 million in 2002.**

  This implies that over one-half of the firms whose total revenue exceeds $10 million earn a substantial proportion of this revenue from functional foods and nutraceuticals.

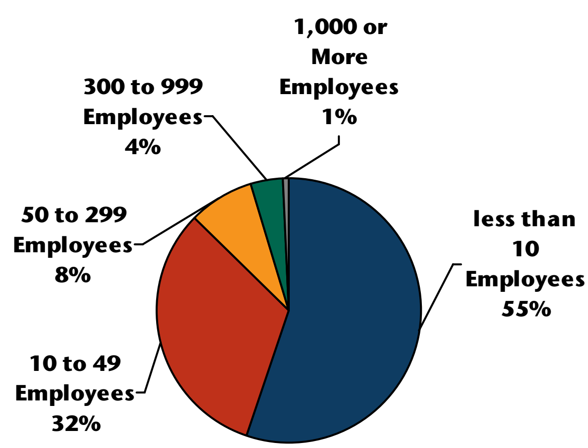
  There are, however, a significant number of firms (24%) that earn less than $100,000 from FFN-related activities.

Chart 3
Distribution of FFN Firms by Revenue from FFN Sales, 2002



- **While there are a few firms (5%) that have more than 300 employees working directly with functional foods and nutraceuticals, most firms (55%) have less than 10 employees who spend time working in these areas.**

Chart 4
Distribution of FFN Firms by Number of Employees with FFN-related Duties, 2002[1]



Note: 1) Includes permanent, seasonal, casual and contract employees.

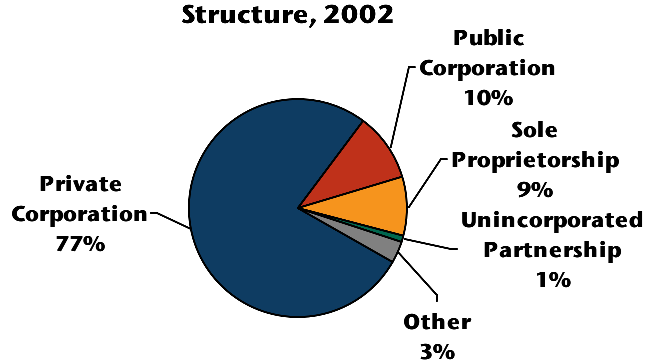
The majority of firms are Canadian controlled private corporations that do not conduct R&D

- **Eighty-five percent of the firms operating in the Canadian FFN industry are Canadian controlled and the remaining 15% foreign controlled.**

  Roughly three-quarters of the firms are private corporations and another 10% are publically traded corporations.

  Eleven percent of the firms are part of multinationals.

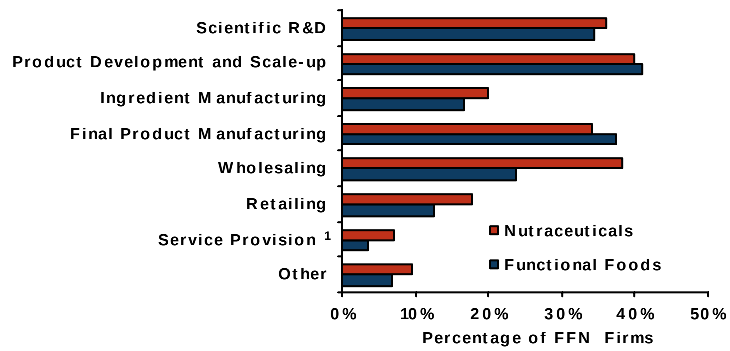
Chart 5
Distribution of FFN Firms by Ownership Structure, 2002



- **Individual firms engage in multiple activities throughout the value chain including scientific R&D, product development, ingredient manufacturing, product manufacturing, wholesaling, retailing and service provision.**

  Thirty-six percent of firms conduct R&D with respect to nutraceuticals and 34% conduct R&D with respect to functional foods.

Chart 6
Percentage of FFN Firms by Value Chain Activity, 2002



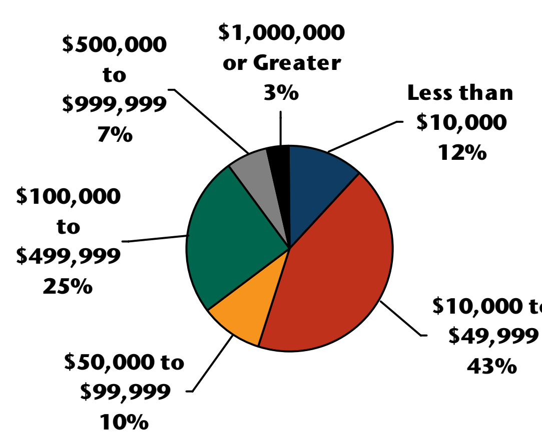
Note: 1) Service provision includes the provision of equipment, software and clinical testing.

- **In 2002 only 5 firms (3%) allocated more than $1 million of their R&D budget to FFN-related areas.**

  The relatively large percentage of firms that do not conduct FFN-related R&D explains in part the response that 64% of firms allocated less than $100,000 to FFN-related R&D.

  Further analysis is needed to determine if the firms that do not conduct R&D are mostly wholesalers.

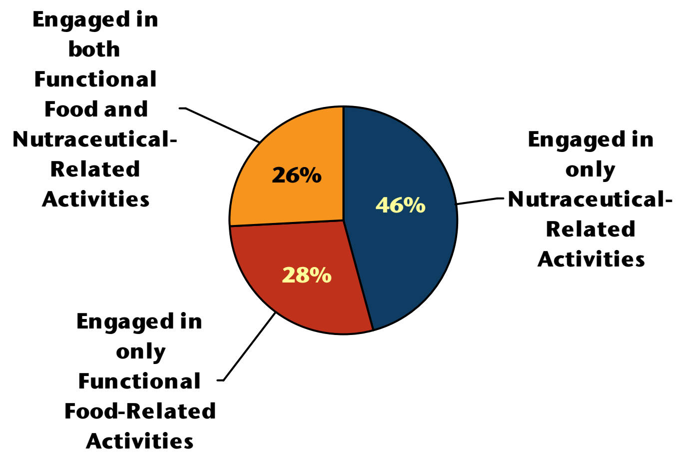
Chart 7
Distribution of FFN Firms by FFN-Related Scientific R&D Expenditures, 2002



Plant-based nutraceuticals are the most common product types

- **More firms work with nutraceuticals than with functional foods.**

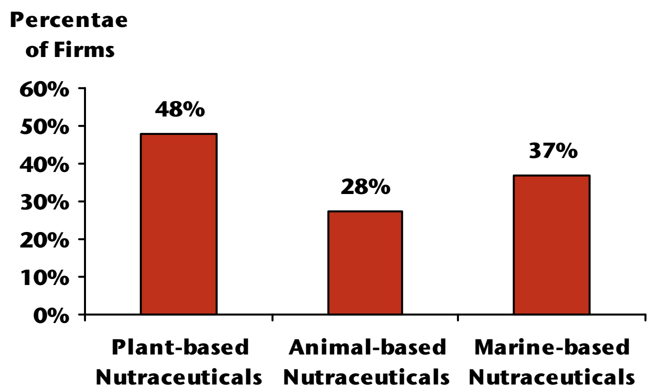
Chart 8
Distribution of FFN Firms by Type, 2002



- **Plant-based nutraceuticals are the most common types of nutraceuticals with which firms deal.**

  Plant-based nutraceuticals include those that are purified from plants, such as beta-glucan from oats and antioxidants from blueberries, and those that are ground from dried plant materials, such as echinacea and ginseng.

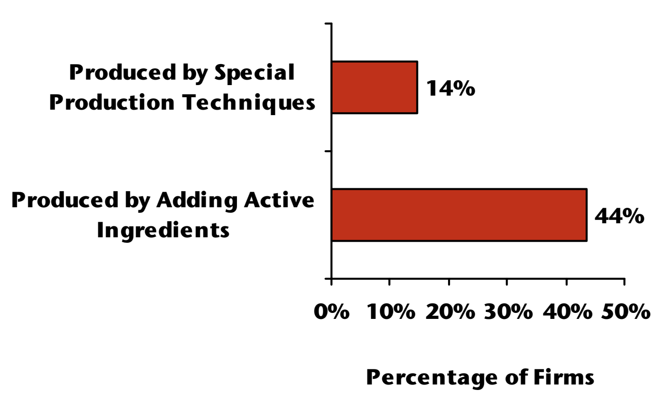
Chart 9
Distribution of FFN Firms by Nutraceutical Type, 2002



- **The most common type of functional foods that firms deal with are those produced by adding active ingredients, such as soluble fibres and beta-glucan, to basic food products.**

  A smaller number of firms (21 firms) deal with functional foods developed via special production techniques.

Chart 10
Distribution of FFN Firms by Functional Food Type, 2002

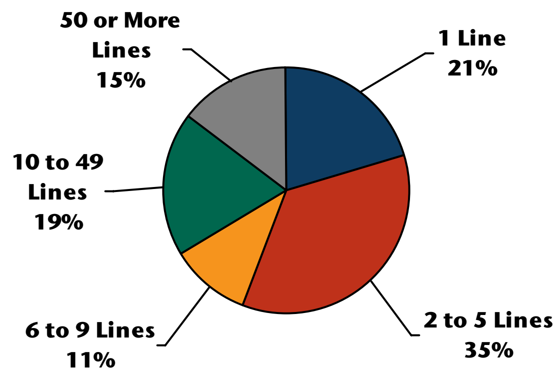


Most firms have only a limited number of product lines

- **While there are some firms that offer more than 50 lines of FFN products, two-thirds of the firms offer less than 10 product lines.**

  Further research is needed to determine whether wholesalers make-up a large proportion of the number of firms offering more than 50 product lines.

Chart 11
Distribution of FFN Firms by Number of Product Lines Offered, 2002

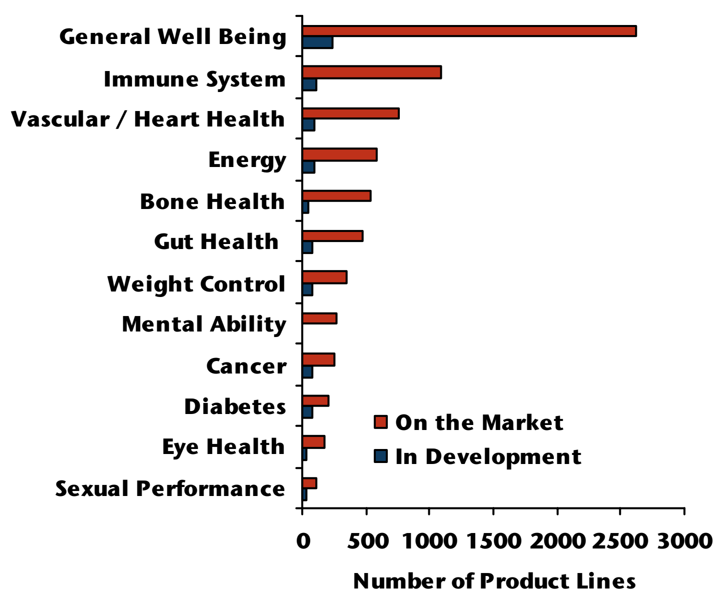


- **Most of the product lines that firms offer on the market have 'general well-being' as one of their focuses.**

  The immune system is the next most popular health aspect addressed by functional foods and nutraceuticals followed by heart disease and energy.

  Product lines in development show a similar distribution with respect to health aspects targeted as those currently offered on the market.

Chart 12
Number of Product Lines by Disease State or Health Aspect Targeted, 2002

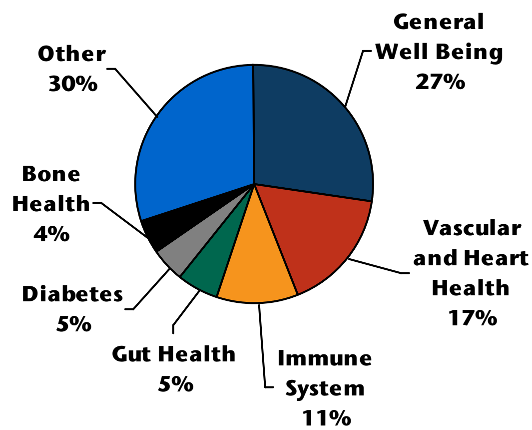


Note: Firms were allowed to attribute individual product lines as targeting multiple disease states and health aspects. In addition, many of the same product lines may have been double counted by both manufacturers and wholesalers.

‘General well being’ products are the largest revenue generators for most firms

- **Products that focus on general well being, followed by those addressing heart health and the immune system tend to generate the most revenue for firms.**

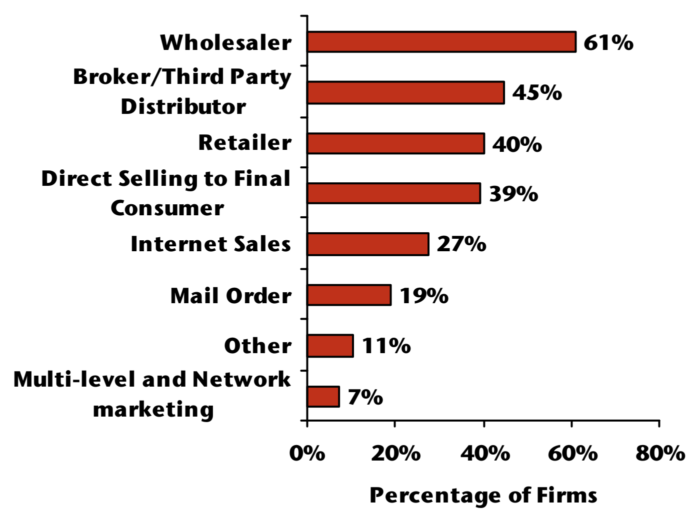
Chart 13
Distribution of FFN Firms by the Product Area that Generates the Most Revenue, 2002



- **Wholesaling is the distribution channel that is most widely used by firms, followed by third party distributors, such as brokers.**

  Around one-quarter of firms are selling through the Internet, and one-fifth through mail order.

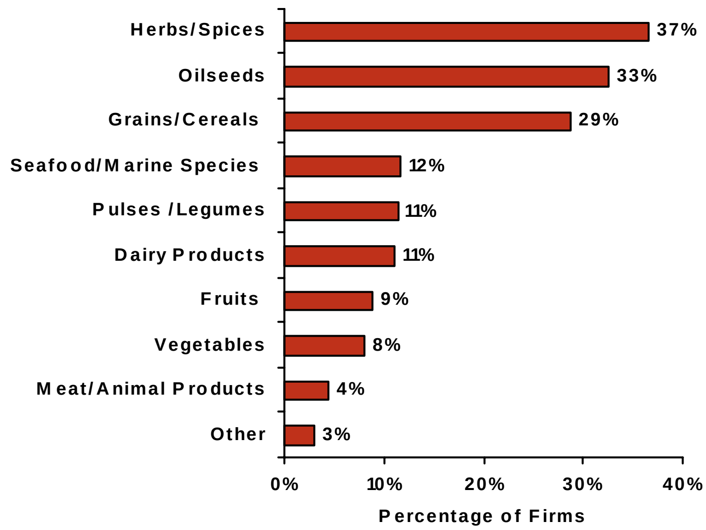
Chart 14
Distribution of FFN Firms by Sales Distribution Channels, 2002



The most common FFN source ingredients are herbs and spices

- **Around one-third of firms that use source ingredients base some of their FFN products on Canadian-grown herbs, oilseeds, and grains.**

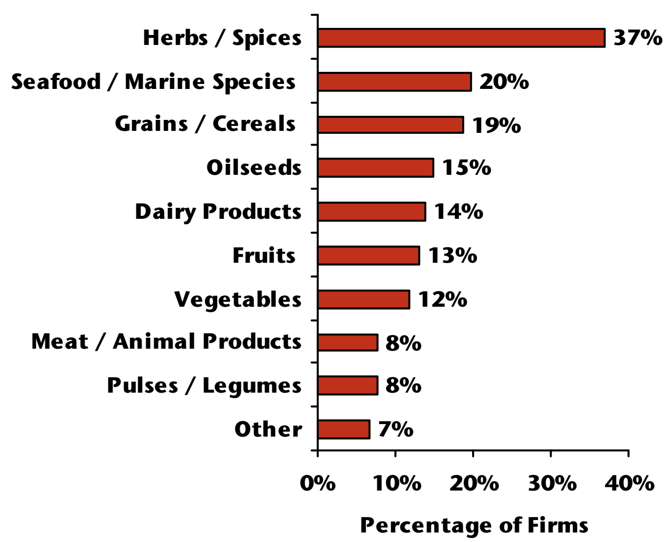
Chart 15
Percentage of FFN Firms by Source Ingredients of Canadian Origin, 2002



Note: These percentages apply only to the total number of firms that use FFN source ingredients. Data was not given on how many firms use FFN source ingredients.

- **Many firms import some of their source ingredients for FFN manufacturing.**

Chart 16
Percentage of FFN Firms by Source Ingredients of Foreign Origin, 2002



Note: These percentages apply only to the total number of firms that use FFN source ingredients. Data was not given on how many firms use FFN source ingredients.

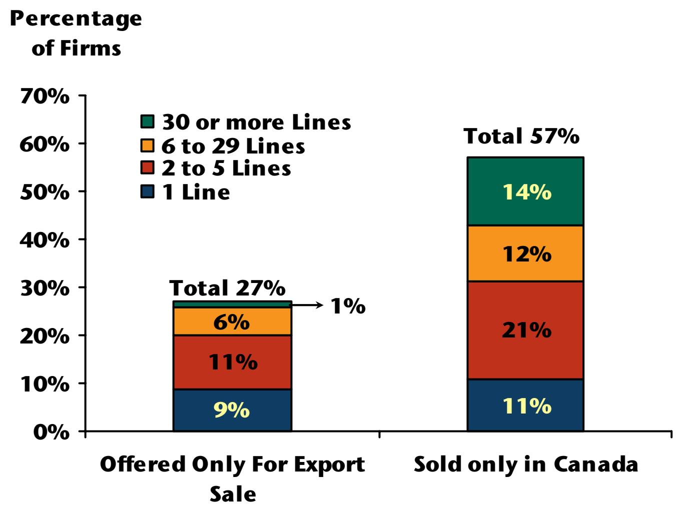
Firms are only beginning to tap export markets

- **Although nearly 60% of firms export some FFN products, most firms are primarily focused on the domestic market.**

  Some firms have more than 30 product lines that are only available domestically. Wholesalers may make-up the majority of these firms, but this needs to be determined with further research.

  Firms tend to have only a few product lines dedicated just to export sales.

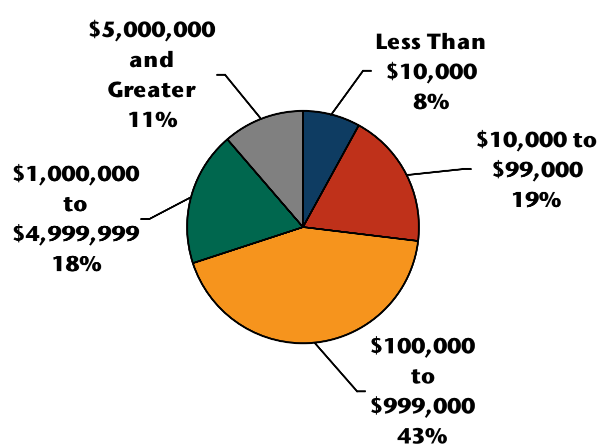
Chart 17
Percentage of FFN Firms by Number of FFN Product Lines Offered Only for Export or Domestic Sale, 2002



- **Most exporters (59 firms or 70%) earned less than $1 million from FFN export sales in 2002.**

  Another 15 firms (18%) earned between $1-$5 million. Only 9 firms (11%) earned more than $5 million in FFN export sales.

Chart 18
Percentge of Exporters by FFN Export Sales, 2002



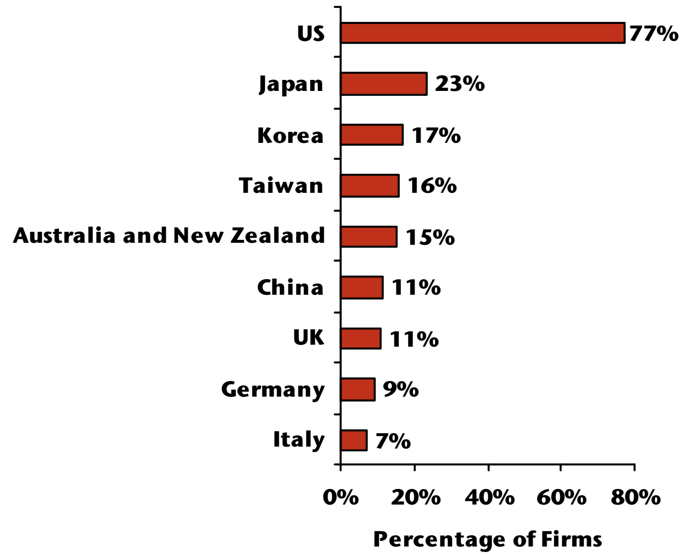
Note: These percentages apply only to the total number of firms that export FFN products.

Most exports are focused on the US market

- **Over three-quarters of exporters sell to the US and one-quarter to Japan. The top European destinations are the UK, Germany and Italy.**

  Around 20% of the exporters are actively investigating expanding into the China market within the next 2 years. Other areas being looked into include Oceania and other Asian and European countries.

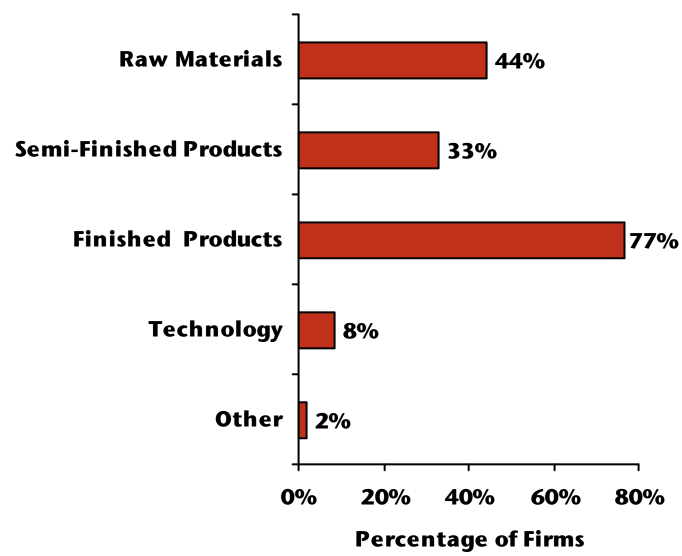
Chart 19
Percentage of Exporters by Export Destination, 2002



Note: These percentages apply only to the total number of firms that export FFN products.

- **Products are exported at each stage in the FFN production chain, from raw materials to finished products, even technology.**

Chart 20
Percentage of Exporters by Product Exported, 2002



Note: These percentages apply only to the total number of firms that export FFN products.

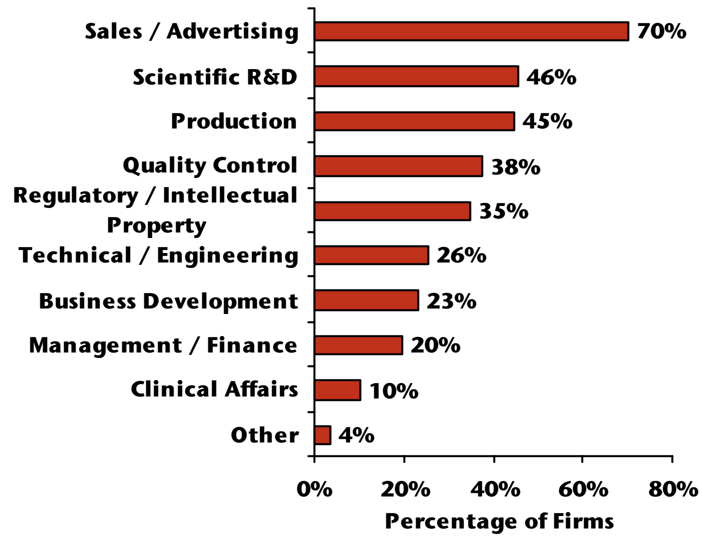
Labour and Capital Inputs in the Canadian FFN Industry

More marketing, research and production staff are needed

- **Approximately one-quarter of firms have unfilled FFN-related positions. The majority of these firms are looking to fill marketing positions (23 firms), followed by scientific research positions (15 firms) and production positions (15 firms).**

  Only 4% of firms hired any FFN-related staff from outside Canada in 2002.

Chart 21
Percentage of FFN Firms with Unfilled FFN Positions by Competencies Needed, 2002

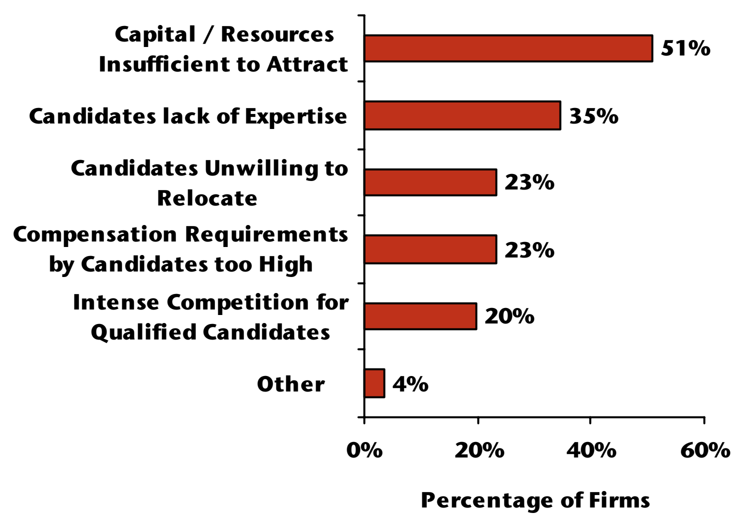


Note: These percentages apply only to the total number of firms with unfilled FFN positions.

- **The most common obstacle firms face in filling their FFN positions is lack of resources to attract qualified candidates.**

  One-third of the firms looking to hire FFN staff (12 firms) found that the job candidates that were available for work had insufficient expertise for their firm's needs.

Chart 22
Percentage of FFN Firms with Unfilled FFN Positions by Obstacles Faced in Filling the Positions, 2002



Note: These percentages apply only to the total number of firms with unfilled FFN positions.

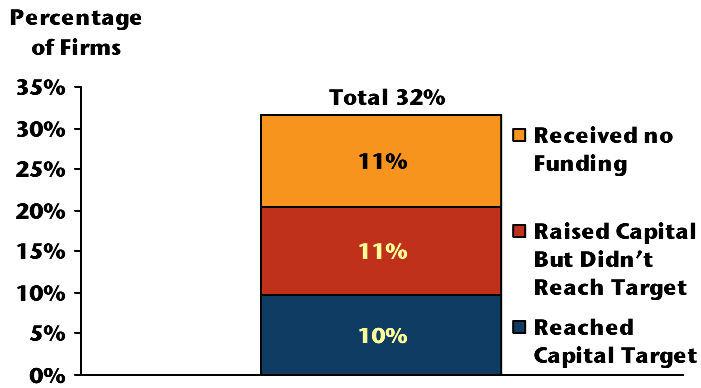
Firms are seeking funding to expand all facets of their FFN operations

- **Forty-six firms (32%) attempted to raise capital specifically for FFN-related purposes in 2002.**

  These firms were seeking funding to expand all facets of their operations from the R&D lab, to production capacity, and sales.

  Only two-thirds of the firms that attempted to raise capital were successful and less than half reached their targeted funding level.

Chart 23
Distribution of Firms Attempting to Raise FFN-Related Capital by their Success, 2002

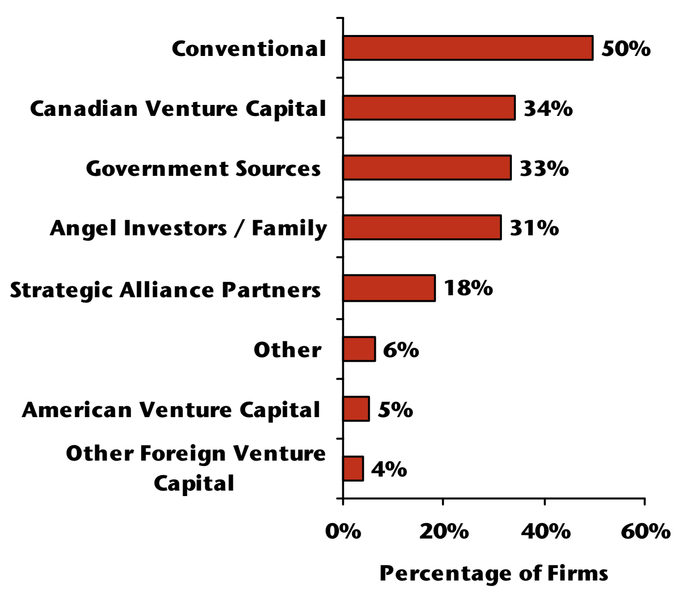


- **Of these, about one-half attempted to raise their FFN-related funding from conventional sources such as banks and IPO stock issues.**

  Other main sources for funding were Canadian-based venture capital firms, government and angel investors including family and friends. Very few firms (3 firms) used American and other foreign venture capital.

  The amount of FFN-related capital raised by individual firms varied. Seven firms were able to obtain over $1 million. Another 13 firms were able to obtain between $100,000 and $1 million, and the remaining 10 firms less than $100,000.

Chart 24
Percentage of Firms that Raised FFN-Related Capital by Source, 2002



Note: These percentages apply only to the total number of firms that raised some capital.

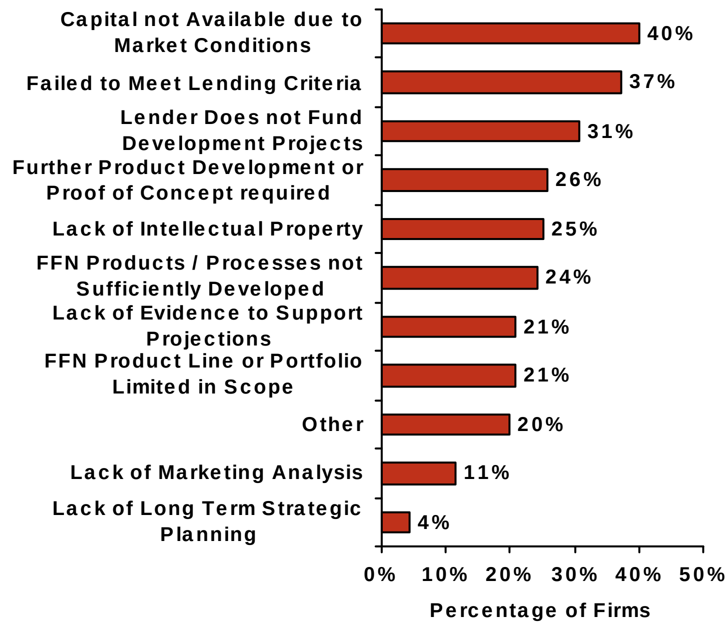
Funding is more difficult to obtain in the early stages of product development

- **Twenty-seven firms (59%) that attempted to raise FFN-related capital had some of their requests in 2002 denied.**

  Reasons for these denials varied widely - the most common being capital unavailable due to market conditions and failure to meet lending criteria.

  A significant number of firms (14 firms), however, were turned down because of insufficient proof of concept and product development. This may imply that funding may be more difficult to obtain in the early stages of FFN product development.

Chart 25
Percentage of Firms Denied Capital by Reasons, 2002



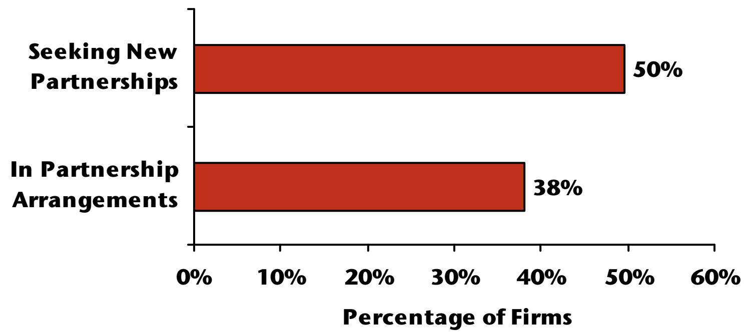
Note: These percentages apply only to the total number of firms that were denied a request for capital.

Business Relationships and Intellectual Property Rights in the Canadian FFN Industry

Many partnerships are conducting R&D

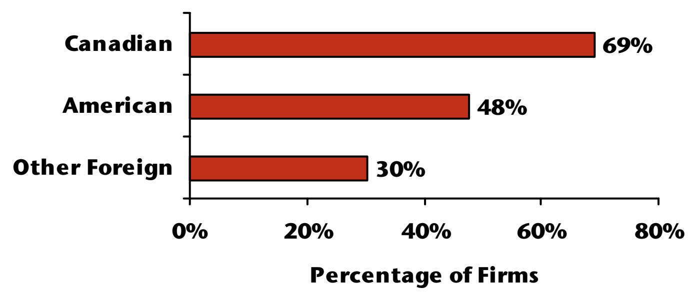
- **Over one-third of firms are involved in partnership arrangements with other companies and organizations and one - half are seeking to form new partnership arrangements.**

Chart 26
Percentage of FFN Firms by their Involvement in Partnership Arrangements, 2002



- **Most partnership arrangements (69%) are made with other Canadian-based companies and organizations.**

Chart 27
Percentage of Firms in Partnership Arrangements by Type of Partner, 2002

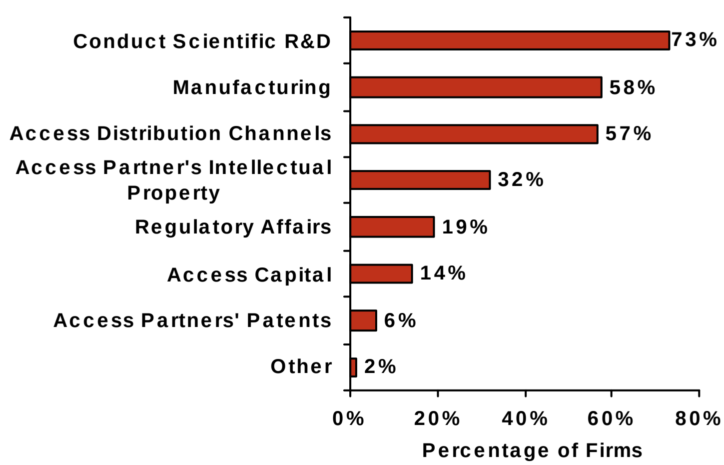


Note: These percentages apply only to the total number of firms in partnership arrangements.

- **Seventy-three percent of the firms that are in partnership arrangements conduct some of their scientific R&D through these arrangements.**

  Firms also use their partnerships to arrange for the manufacture of FFN products (32 firms) and to gain access to distribution channels (32 firms).

Chart 28
Percentage of Firms in Partnership Arrangements by Purpose, 2002



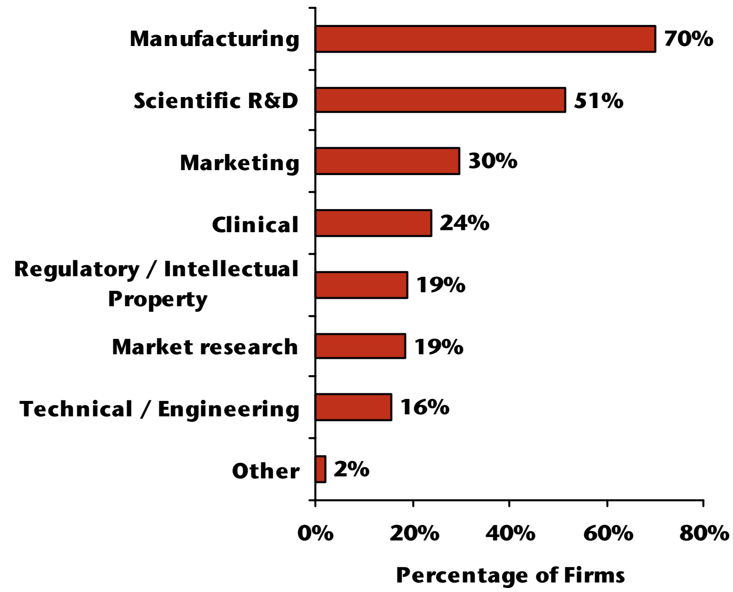
Note: These percentages apply only to the total number of firms in partnership arrangements.

Contracts are used predominantly to fill production requirements

- **Fifty-seven firms (39%) contracted out FFN-related activities in 2002.**

  Most of the contracts were related to the manufacture of products (40 firms) and the conducting of scientific R&D (29 firms).

Chart 29
Percentage of Firms that Contracted Out FFN-Related Activities by Contract Purpose, 2002

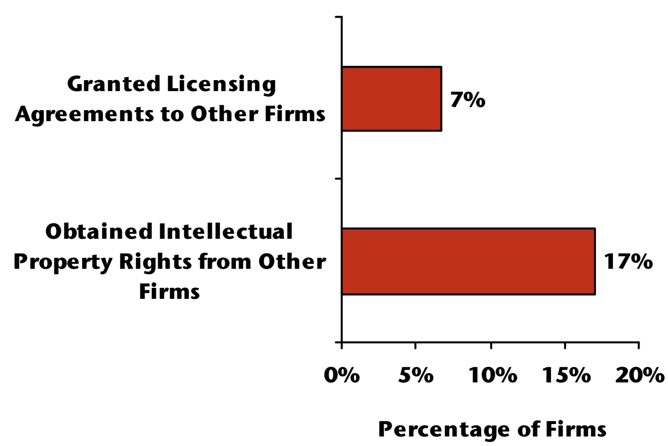


Note: These percentages apply only to the total number of firms that contracted out FFN-related activities.

- **Firms tend to retain exclusive control over their FFN-related intellectual property rights.**

  In 2002 only 10 firms (7%) granted licensing agreements to other firms and only 25 firms (17%) obtained intellectual property rights from other firms.

Chart 30
Percentage of FFN Firms by Intellectual Property Right Trading, 2002

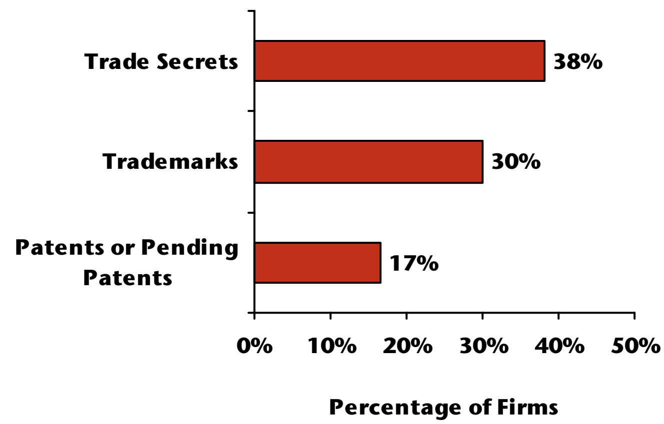


Firms tend to use less formal means of intellectual property right protection such as trade secrets

- **Trade secrets followed by registered trademarks are the most commonly used methods for protecting intellectual property rights.**

  Only 24 firms (17%) use patents.

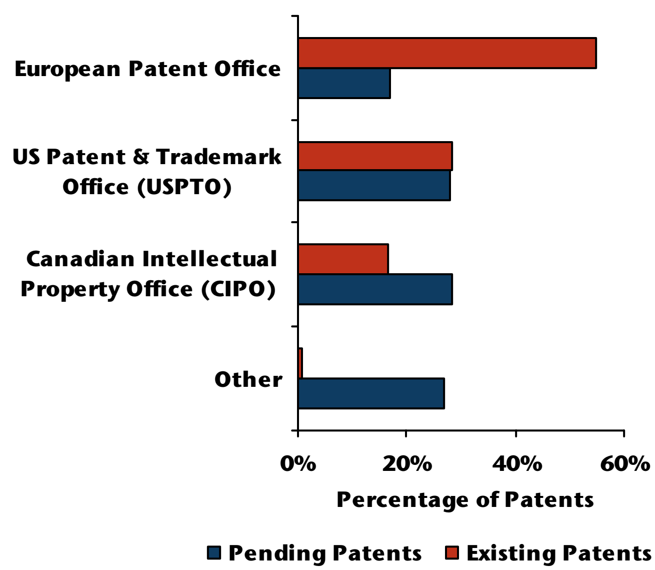
Chart 31
Percentage of FFN Firms by Method of Intellectual Property Right Protection, 2002



- **Over one-half of the patents that firms now have are registered with the European Patent Office.**

  Pending patents on the other hand, are more or less equally distributed across patent offices around the world.

Chart 32
Percentage of FFN Patents by Patent Office, 2002



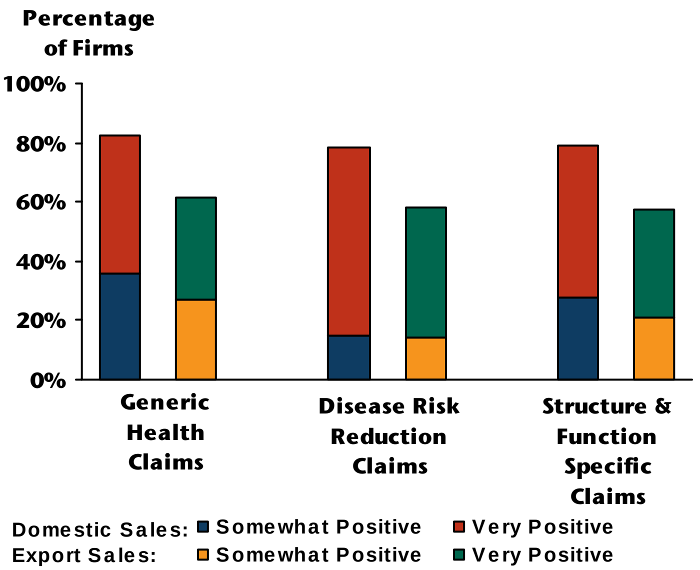
Impact of Regulations in the Canadian FFN Industry

Firms feel health claims could increase their sales

- **In general, most firms feel that the ability to use health claims on their FFN products would have a positive impact on both their domestic and export sales.**

Although there was no significant difference in the total positive response between the ability to use generic health claims versus specific disease risk reduction claims and structure and function specific health claims, firms were the most strongly positive about disease risk reduction claims.

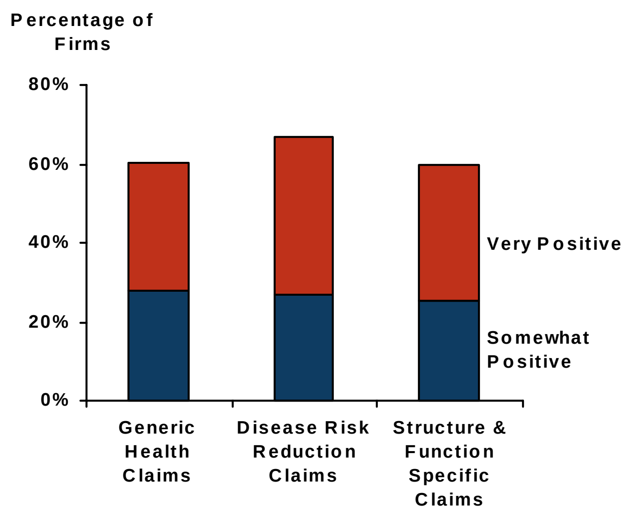
Chart 33
Percentage of FFN Firms That Felt that the Ability to Use Health Claims would have a Positive Impact on Sales, 2002



- **Over 60% of the firms feel that the ability to use any type of health claims would increase their willingness to conduct research to support these claims.**

But firms think that the ability to use disease risk reduction claims would provide them with the greatest overall incentive.

Chart 34
Percentage of FFN Firms That Felt that the Ability to Use Health Claims would have a Positive Impact on their Willingness to Conduct Research to Support Health Claims, 2002



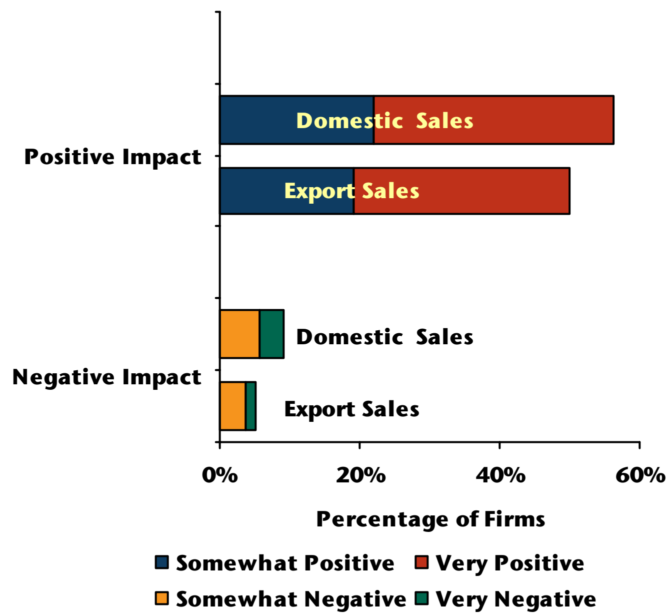
Firms are mixed on what would be the impact of matching US standards

- **Just over half the firms thought that changing compositional and labeling regulations to match US standards would have a positive impact on their domestic and export sales.**

  Roughly another 10% of the firms thought it would have a negative impact on domestic sales and 5% thought it would also hurt export sales.

  The remaining firms were uncertain of the impact on their domestic sales (21 firms) and export sales (27 firms) or considered it to be null (25 firms).

Chart 35
Percentage of FFN Firms According to their Perception of the Impact of Matching US Standard, 2002



Canada