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**GENERAL BUSINESS PANEL SURVEY:
CONTENT RECOMMENDATIONS**

Industry Canada Advisory Committee on Business Strategies

Marc Duhamel, Industry Canada
Ignatius Horstmann, University of Toronto

Working Paper 2009-05

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This report is a reflection of the expertise of the members of the committee, and Industry Canada thanks them all for their hard work. Through their extensive knowledge of the issues at the heart of the General Business Panel Survey, the members provided key suggestions and advice, and acted as a sounding board throughout the process of writing this report. The recommendations presented herein have also been greatly strengthened by the unique perspectives of each of the committee members, and by the opportunity for the members to meet and exchange their views.

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Abstract

It is now widely accepted that one of the main challenges to Canada's future economic prosperity is the business sector's lagging productivity growth and innovation performance. Two factors can explain a lower intensity of business innovation at the aggregate or industry-level between two countries. First, a smaller proportion of firms could be undertaking innovation activities. Second, those firms that do innovate pursue those activities less intensively. To understand the factors that drive low intensity of business innovation at the industry level, one must understand, therefore, the determinants of business innovation at the firm-level. While the available evidence supports the view that business innovation yields better firm performance in Canada and abroad, this evidence does not explain *why* in a given industry some Canadian businesses are not intensively adopting innovation-based strategies, while others do. This report describes basic business data elements that could support empirical advances in policy research on the important question of business innovation in Canada.

Key words: productivity, innovation, business innovation

Résumé

Il est maintenant généralement accepté que l'un des principaux défis relativement à la prospérité économique future du Canada est la perte de vitesse de la croissance de la productivité et du rendement de l'innovation dans le secteur des entreprises. Deux facteurs peuvent expliquer l'intensité plus faible de l'innovation dans les entreprises à l'échelle d'un pays ou à l'échelle des industries entre deux pays. Premièrement, il est possible qu'une proportion moindre d'entreprises entreprennent des activités d'innovation. Deuxièmement, les entreprises qui innoveront le font de façon moins intensive. Pour comprendre les facteurs qui dictent la faible intensité de l'innovation des entreprises à l'échelle industrielle, nous devons comprendre les facteurs déterminants de l'innovation à l'échelle de l'entreprise. Bien que les données disponibles corroborent l'opinion selon laquelle l'innovation des entreprises entraîne un meilleur rendement des entreprises au Canada et à l'étranger, ces données n'expliquent pas *pourquoi* dans une industrie donnée, certaines entreprises canadiennes n'adoptent pas intensivement des stratégies fondées sur l'innovation, alors que d'autres le font. Ce rapport décrit des éléments de données de base sur les entreprises qui pourraient sous-tendre des progrès empiriques en recherche stratégique sur l'importante question de l'innovation dans les entreprises au Canada.

Mots clés : productivité, innovation, innovation dans le secteur des entreprises

1. Policy Research Rationale for a Business Strategies Survey

1.1. Background

It is now widely accepted that one of the main challenges to Canada's future economic prosperity is the business sector's lagging productivity growth and innovation performance. Canada's business sector labour productivity relative to the U.S. stood at 75% in 2006 compared to 90% in the early 1980s. Most of the widening in the Canada-U.S. business-sector-productivity gap since the early 1980s is due to slower growth in multi-factor productivity (MFP) in Canada. Canada also trails most other advanced economies, including the U.S. on a variety of innovation or technology-related investment indicators such as business expenditures on research and development or information and communication technologies. Research shows that MFP growth is linked to business innovation and technology adoption. However, research is still very much inconclusive about what drives business innovation and technology adoption.

Two factors can explain a lower intensity of business innovation at the aggregate or industry-level between two countries. First, a smaller proportion of firms could be undertaking innovation activities. Second, those firms that do innovate pursue those activities less intensively. To understand the factors that drive low intensity of business innovation at the industry level, one must understand, therefore, the determinants of business innovation at the firm-level.

To support the development of evidence-based policy, policy research needs to explain why firms in Canada do not use innovative inputs as intensively as those in other advanced economies. In particular, research is needed to identify policy factors that contribute to Canadian firms' poor innovation performance. While the available evidence supports the view that business innovation yields better firm performance in Canada and abroad, this evidence does not explain *why* in a given industry some Canadian businesses are not intensively adopting innovation-based strategies, while others do. So what is the nature of the evidence that could help further policy research on the important question of business innovation in Canada?

1.2. Why a business strategies survey?

There is an emerging consensus in the economics and strategic management literature that business innovation, whether in products, processes, organizations or marketing, is the result of strategic decisions by the firm or the entrepreneur as to how it will grow and maintain its profitability or competitiveness. These long-term strategic business decisions have short-run implications because they determine the firm's short-run demand for innovative inputs such as HQP, ICTs, or R&D. For example, a firm that pursues a focused innovation-based strategy of providing the most advanced products in its markets must invest heavily in R&D destined to develop product innovations. Therefore, the observed intensity levels of business innovation depend on long-term business strategies

related to innovation far more than on short-run demand and supply conditions for inputs to innovation and for innovative products.

Evidence suggests that the most successful firms are those that have a well-defined, well-chosen strategy and are able to implement their strategy through appropriate short-run *tactical* decisions.¹ Such strategies need not solely focus on innovation, however. A firm's business strategy often guides decisions with respect to tactical activities in a broad range of areas such as the purchasing of raw material and commodities, the hiring of non-specialized production workers, and the location of customer service call centers, just to name a few.

Moreover, it is difficult to deduce firms' strategies by observing their activities, because different firms may implement broadly similar strategies in very different ways. Some firms may pursue a product-innovation-oriented strategy by developing an extensive in-house R&D capacity; others may choose to contract out R&D, and concentrate on product conception and marketing functions.

Firms' decisions to adopt innovation-based strategies are of particular interest to policy-makers in all of the advanced economies. Policy-makers seek to identify policies that will lead firms in their jurisdictions to adopt innovation-based strategies by creating conditions in which firms with innovation-based strategies are most likely to succeed, thereby creating the appropriate economic incentives to adopt innovation-based strategies.

Very little information is available on the links between policy and the adoption and success of innovation-based firm strategies. But preliminary evidence suggests that unsophisticated business strategies in Canada may be an important factor in Canada's poor innovation performance. One of the most cited pieces of evidence about the quality of business strategies in Canada, the World Economic Forum's *Company Operations and Strategy Index* shows Canada lagging most other advanced economies in the use of innovation-oriented strategies at the 18th position.²

In many industries in many advanced economies firms with innovation-oriented strategies and those without such strategies co-exist and survive in the same environment (see Figure 1 below). Identifying the policy and market factors driving differences in firm strategy within an industry and determining whether firms with innovation-oriented strategies predominate is now widely regarded as a major element to the development of successful and efficient evidence-based innovation policy.

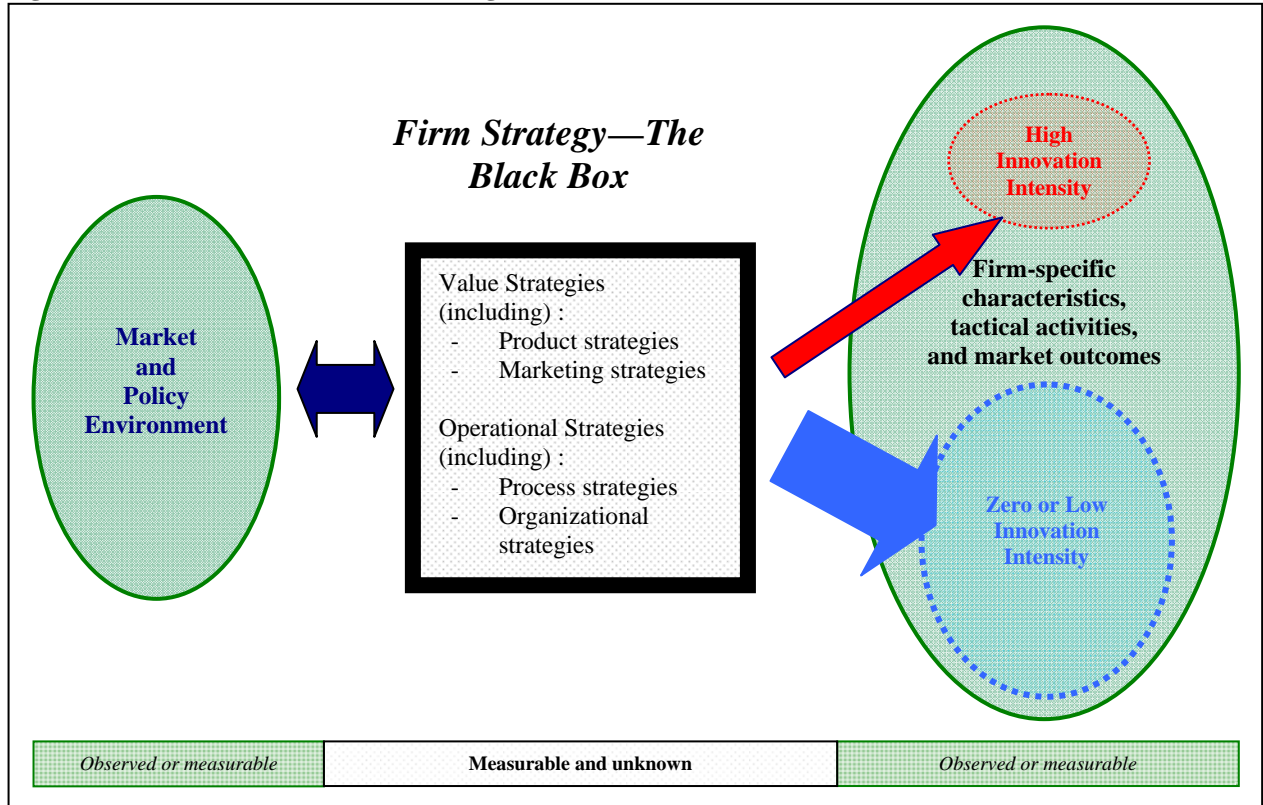
The core activities of business decision-makers in Canada and elsewhere are still very much a "black box" to economists and to policy-makers, partly because of a relative novelty of the research itself constrained by the scarcity of the data on the topic. Still, a

¹ A succinct description of tactical decisions is presented in Section 2 and discussed in more detail in Section 3.

² The World Economic Forum index is based in large part on interviews with a small sample of business leaders.

growing literature emphasizes the central role played by various business strategies that determine the firm’s demand for innovative inputs and subsequently its financial performance and outcome in the market.³

Figure 1 The Black Box of Business Strategies



In light of the major role of business strategies in explaining firm-specific characteristics and tactical activities such as R&D expenditures or technology adoption, it seems particularly important to develop reliable information about business strategies to understand how they relate to the firm’s demand for innovative input, and determine how they are affected by policy.

³ A recent seminal contribution in this respect comes from Bloom and Van Reenen (2007) who use a new and original survey of management practices across firms and nations to provide empirical evidence about some of the sources of inter-firm productivity differences.

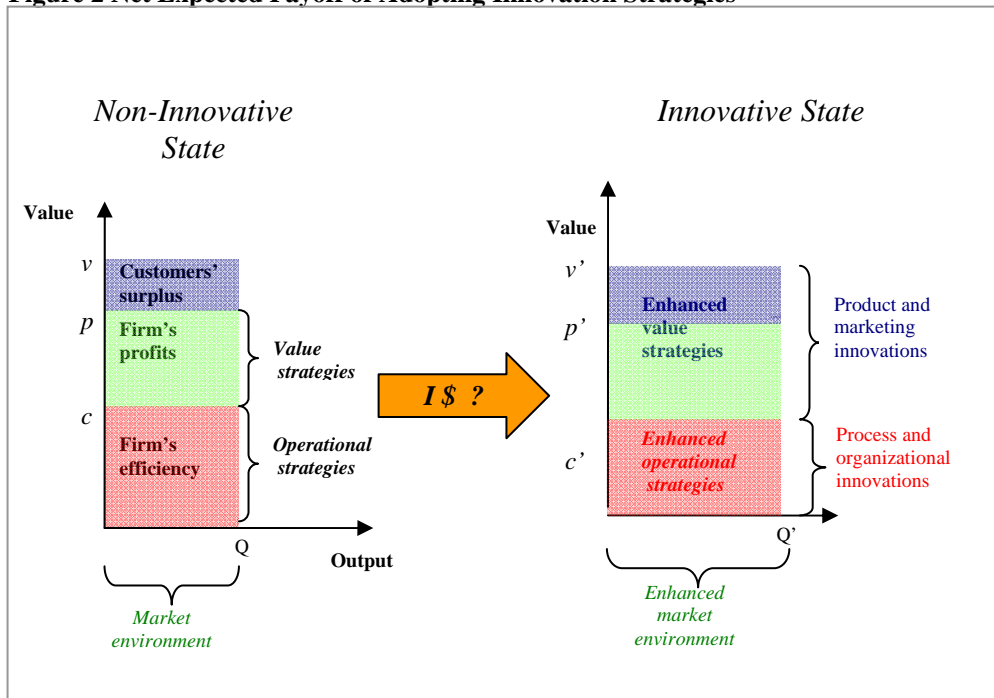
2. A Framework for Business Strategies and Innovation

A broad overview of the economics and strategic management literature provides a simple, yet powerful, framework to understand the factors that affect firm incentives to innovate.⁴ Recent research on the innovation process identifies a myriad of activities that can be part of this process. One great advantage of the business strategies approach is to identify a small group of elements that make up the firm's strategy, then to place the firm's many activities in the context of these strategic elements. A simple diagram (Figure 2) displays three broad categories of business strategies that affect the incentives of firms to innovate: value strategies, operational strategies, and finally innovation strategies tailored to enhance either value strategies or operational strategies or both. The market and policy environment then determines the success a firm has with a particular set of business strategies. A proper characterization of those business strategies can then be used to determine which market and policy factors can lead to greater business innovation.⁵

Implicit in this simple diagram is that it is in the firm's best interest to pursue innovation-related activities at some (partially sunk and irrecoverable) cost at any point in time only if it expects a positive net profit from undertaking these activities, rather than delaying those activities to future periods or not undertaking them at all. In other words, a non-innovative firm will undertake innovation activities only if it expects a net positive profit (appropriately discounted for risk and the opportunity cost of innovation) over and above what the non-innovative business strategy currently yields as a stream of expected profits. The gain must come either from gains in the value captured from customers (value strategies) or cost gains (operating strategies). The expected gain is affected by uncertainty—technological uncertainty, strategic uncertainty, market uncertainties, and policy uncertainties. The policy environment, the market environment and uncertainty as to each thus influence the incentive of a firm to move from a non-innovative strategy to an innovative strategy and the relative success of firms with each type of strategy.

⁴ More precisely, this framework can be implemented with quantitative and statistical models and methods that can be used to study the influence of changes in the market and policy environment on firm-level innovation intensity.

⁵ Section 3 characterizes in greater detail these business strategies. The Appendix provides an exhaustive list of measurable factors associated with these business strategies.

Figure 2 Net Expected Payoff of Adopting Innovation Strategies

In this framework, the firm's choice of business strategy depends on the expected payoffs to the available strategies. In particular, the greater the expected payoff to an innovative business strategy, the more likely it is that a firm will choose this strategic option and that firms with these strategies will thrive and grow. Thus the economic incentives for business innovation depend, not only on the cost of the inputs to innovation (e.g. the time and R&D expenditures necessary to bring the product to market), but also on the ability of the firm to capture value enhancement or to realize operating efficiencies through innovation. Thus, the overall incentives of firm to innovate are only partly under their own control when they select from the various business strategies. The ability to capture returns to an innovative strategy depends very much on the market and policy environment.

Concretely, consider a firm evaluating the profitability of the development and commercialization of a major product innovation. Although the product innovation will yield a major improvement to the value of the product to its customers, the firm may not undertake the necessary expenditures if it is unable to capture a significant share of the customers' surplus with the new product. In particular, market-specific public policies (e.g. price regulations or competition policy practices) or firm-specific technological or informational restraints (e.g. low capacity to gather and analyze customer demand information because of insufficient investment in ICTs) can greatly limit the capacity of the firm's pricing arrangements to capture customers' surplus and yield a negative expected profit from an innovative product, as compared to its current set of generic products.

This example shows also that a wide range of public policies, and not necessarily those most commonly associated with innovation policy, can have an important impact on the firm's strategic choices to innovate. Any policies that affect both the size of the expected payoff or the uncertainty attached to the strategy to innovate can have a significant impact on the industry- or aggregate-level innovation intensity.

3. Data Requirements

Firms may change their business strategies in response to changes in the economic environment by rivals, suppliers and clients. Sometimes, firms also trigger significant changes to their environment on their own. These changes may occur in response to policy changes. Also, the outcomes of business strategies must be captured over time. This framework suggests that, if we are to understand the factors that drive firm- or country-level business innovation activities, we must develop a dataset that measures not just firm characteristics with their associated innovation inputs and outputs, but also the current and past business strategies in relation to the firm's market and policy environment.

Thus in constructing a survey of business strategies for policy purposes, one needs to consider, not only how to measure the strategies themselves, but also how to measure the outcomes resulting from strategic decisions and the influence of policy on both the decisions and the outcomes. These considerations dictate a *longitudinal design* for the survey. Information on business strategies must be linked to information on outcomes in order to assess the effectiveness of different strategies.

Above, we identified three elements of firm strategies: value strategies, operating strategies and innovation strategies (which can effect either value strategies or operating strategies or both). Below, we identify various strategic elements that are often associated with value and operational business strategies and single out those that are related to innovation activities that enhance the returns of both types of strategies.

In Appendix A we provide a more detailed description of these strategies and also outline the tactical and short-run activities related to these strategies. This description outlines broad and generic measurable elements that can be used to develop survey questions about those business strategies. In addition, we also identify the requirements for basic information on the firms and establishments surveyed and on market and policy environment. This includes a description of some of the major elements required to identify firm, market, and policy environment in which the firm or establishment operates that is necessary to control for the external factors that influence business strategies and tactical decisions.

Below we list the broad categories of data elements that would make-up the core of a longitudinal survey on business strategies and innovation.

3.1 Firm and Establishment Characteristics

As with any other business survey, the GBPS should include some basic information describing the firm, its owners, its location and its relationship with (single- or multi-) establishments. The GBPS would also provide similar information about the characteristics of the sampled establishments. To be consistent with the longitudinal framework required, this data should be sampled longitudinally.

3.2 Value Strategies and Tactical Activities

Value strategies are ones that *relate to the sales and product management vision of the firm*. They define the firm's market position as regards product differentiation branding, price / value positioning, service provision and the like. For example, they define the broad parameters within which tactical marketing decisions are made and so impose constraints on the extent to which the tactical decisions allow the firm to capture unit value, and along with the market environment. Such strategies would generally be described by: quality vs. low-price branding, product line length, product life cycle, market reach, and the most important pricing policy (e.g. bundling).

Tactical value decisions are those activities generally involved in the day-to-day operation of the firm or the establishment aimed at realizing its value strategies. Some of those activities include: selling expenditures, sales force and their compensation and reward schedule, the location of sales offices, and the marketing of products.

Some of these strategic decisions will generally be made at the level of the firm. However, some may be delegated to the level of the establishment to reflect the local (competitive) market environment in which the firm and its establishments operate. Accordingly, sampling of these business strategies and tactical activities should be done at both levels of a firm.

3.3 Operational Strategies and Tactical Activities

Operational strategies are ones that *relate to operation, control and decision making within the firm*. They are often expressed into policies adopted by the firm to realize minimum cost in creating the product or the service. These can be developed at the level of management of the firm itself or through delegated decision-making authority across establishments and /or across operational (or functional) areas within the firm (e.g. a firm operating as a series of profit centres). Because of the importance of the decision-making aspect, they sometimes relate to different elements of the firm's product line or even across the elements of the supply chain. Operational strategies would include the definition of broad factors such as: ownership structure, decision structure, supply chain management, and the production structure.

Because they involve the day-to-day, quarter-to-quarter operations of the firm, **operational tactics** *best describe what firms and establishments actually do*. This

includes such elements as materials expenditures, expenditures on plant and equipment, employment, and other supply procurement activities that are generally monitored by an important amount of business surveys.

In general, we view operational strategies as being determined at the firm level and affecting the tactical activities at the establishment-level. Thus, sampling would be done accordingly.

3.4 Innovation Strategies and Tactical Activities

Innovation strategies involve decisions regarding the enterprise's focus on product, process, marketing and organizational innovations. These strategies *enhance the long-term operational and value strategies pursued by the firm*. Such strategic decisions involve complex decisions involving both value and operational strategies such as the location of innovative activities both geographically and in terms of decision making authority, and sometimes in relation to the pre-requisite technology adoption investments. For this reason, it appears particularly important (and somewhat novel) to capture simultaneously not only the common information covering business innovation, but also include information regarding strategies and tactical activities related to various general purpose or specific technologies that sometimes focus and guide enhanced value and operational strategies. Such strategies would describe, for example, not only how innovation within the supply chain is managed, but also how innovation and technological adoption activities within the firm are managed, monitored and evaluated. Other generic innovation strategies would also include the focus of the innovation such as product innovation, product adoption, marketing innovation, vertical upgrading vs. product line extension, the financing of innovation, and the strategy towards the licensing of intellectual property (IP).

As for the **tactical innovation activities**, those would generally *consist of commonly measured items related to innovation inputs or outputs*. Those would include such items as spending on product development, licensing payments and receipts, expenditures on the commercialization of new products introduced, and also the promotional expenditures associated with new products.

3.5 Market and Policy Environment

Given that the above strategies and tactical decisions are made in and are affected by the market environment in which the firm and its establishments operate, we need to measure the relevant features of the market and policy environment of those strategies and tactical activities. Ideally, these features would be measured at the establishment level. They include: industrial and market structure relating to the firms' tactical activities, firm and industry market performance information, and various public policies as described above.

4. Data Gaps

What is required, and what the General Business Panel Survey (GBPS) is envisioned as providing, is a comprehensive longitudinal dataset that allows the identification of the main factors driving business innovation and technology adoption activities in Canada. The data requirements to understand the factors that affect business demand for innovative inputs listed in Appendix A are extensive. Such extensive coverage of measures naturally raises two inter-related sets of questions.

First, which of these measures are available in existing datasets in Canada and abroad? While this report does not specifically identify which of these measures are available in other datasets, we recognize that many are available from other data sources in some way or the other. It should, however, be mentioned as a significant gap that the data already collected have not been available to researchers as a longitudinal firm/establishment linked dataset, but instead have been scattered among various surveys with sporadic links.

Concerns about business innovation and technology-adoption are not new in Canada. As a result, there is a significant history of data development exercises and surveys that can be used to develop and implement the measures identified in the Appendix. For example, measures developed in the context of the following technology adoption and innovation surveys often included much of the needed information:

- Survey of Manufacturing Technology (1987, 1989)
- 1993 Survey of Innovation and Advanced Technology
- Survey of Advanced Technology in Canadian Manufacturing – 1998
- 1998 Survey of Advanced Technology in the Canadian Food Processing Industry
- Innovation, Advanced Technologies and Practices in the Construction and Related Industries Survey (1998)
- Survey of Innovation (1996, 1999, 2003, 2005)
- Survey of Electronic Commerce and Technology (2000-2006)
- Biotechnology Use and Development Survey (1997, 1999, 2001, 2003, 2005)
- Survey of Environmental Protection Expenditures (1996, 1998, 2000, 2002, 2004)
- Survey of Commercialization (2007)

Other surveys, such as the Workplace and Employee Survey and the Labour Force Survey contain some measures that are similar to those that are listed above. Detailed firm-level datasets such as the General Index of Financial Information (GIFI), the Export Registry, the Research and Development in Canadian Industries (RDCI) and from the Longitudinal Employment Analysis Program (LEAP) also contains an extensive array of measures required. Ideally, the GBPS would link to such datasets, and other business administrative datasets, to expand current research opportunities and also use them to develop the GBPS.

Our view is that existing datasets often lack the longitudinal structure or the sample scope and/or depth (e.g. in terms of industries covered or linkages to administrative datasets) that is required to address the policy research issue outlined in Section 1. The table below displays the significant limitations of existing survey instruments. Most Canadian and international survey instruments often cover only minor areas of the GBPS data requirements.

GBPS Data Requirements	Survey of Changing Business Practices in the Global Economy, 2007	Panel Study of Entrepreneurial Dynamics II, 2005	Profit Impact of Market Strategy	Workplace and Employee Survey (Panel)	Survey of Growth Companies, 1992	Executive Opinion Survey, 2005
<i>Firm Characteristics</i>	****	****	****	****	****	****
<i>Operational Strategies</i>	****	****	X	X	****	****
<i>Operational Tactical Decisions</i>	*	*	*	****	***	*
<i>Innovation Strategies</i>	X	X	*	X	X	**
<i>Innovation Tactical Decisions</i>	X	X	*	*	*	*
<i>Value Strategies</i>	*	*	*	*	***	**
<i>Value Tactical decisions</i>	X	*	*	*	X	X
<i>Market and Policy Environment</i>	*	*	**	*	*	**

Subjective scale of data requirements overlap: From 5* (Important) to 1* (Minor). X indicates no overlap.

In particular, past or existing survey instruments have not adequately dealt with issues related to *value strategies* and tactical activities. Some business surveys sometimes encompass elementary measures of market positioning and market reach, but the information is often not captured or available in a way comparable to what the GBPS would allow. Moreover, a complete typology of the *operational* strategies guiding the decision-making process within the firm also has been omitted from previous survey instruments. This information would greatly enhance the policy research opportunities and capacity on business innovation and therefore needs to be provided within the GBPS. Also, market features and conditions that shape competition and rivalry and influence the strategic and tactical environment of the decision-making process, have been poorly measured in previous survey instruments.

The second set of questions relate to the relative importance of strategies and tactical decisions that empirical research has *already* identified as key determinants of innovation performance (and, of course, on how to construct measures of these decisions). Unfortunately, most of our current understanding about which factors or strategies are key determinants of business innovation comes from a few case studies using proprietary datasets or small and focused datasets. In addition, much of the data development efforts in this regards have been done with a focus on American or European companies. One

such example, which in our view highlights the potential importance of the GBPS, consists of a series of large scale management practices and organizational structures and behavior surveys conducted internationally by Professors John Van Reenen (London School of Economics) and Nick Bloom (Stanford University) in conjunction with the McKinsey Global Institute.

To our knowledge, the GBPS would be the first major datasets that would allow a more comprehensive and rigorous treatment of business strategies and management practices which could then be compared to similar data elements for a wide range of industries in Canada and abroad.

5. Six Recommendations

Besides the recommendations about the informational content of the envisioned GBPS survey outlined in Appendix A, we expect that several issues will need to be addressed in its development. Here, we provide supplemental recommendations regarding the survey design and implementation issues of the GBPS.

- 1. The GBPS should be longitudinal and should sample a large number of firms within a large number of narrowly defined industries including services and manufacturing.**

As we have stated above, there are a number of reasons for this choice. One is that any data analysis must face the fact that there is always unobserved firm and/or industry heterogeneity that makes inference difficult. A longitudinal dataset will allow analysts to focus on changes over time within a given firm or industry and so control for variation that is the result of this unobserved heterogeneity. Another is that a longitudinal dataset can help the analyst to deal with the important causality issue. Since many of the variables that will ultimately be measured – price, advertising expenditures, firm organization, number of competitors, to name but a few – will be endogenous variables, a longitudinal framework allows the use of statistical techniques that can mitigate this problem.

A longitudinal dataset also allows the policy researcher to use changes in policy to uncover the connection between policy, strategy and innovation. Next, the GBPS sample should also include a significant sample of large firms in addition to smaller sized ones. Previous research has shown that the innovation behavior of Canadian large firms is very different from that of large firms in the U.S.. Research results based on just a sample of small firms, therefore, will prove inappropriate for many industries in Canada. Finally, given the importance of the service sector in Canada's economy, it is crucial that service industries be part of the dataset.

- 2. The GBPS should be linked to administrative datasets that can be used to gain information about exogenous policy changes.**

To understand the connection between policy, strategies and innovation, some exogenous variation will be required. An obvious source of exogenous variation is government policy, which occurs over time. Since the industries in which arguably exogenous variation occurs over time are not easily predictable, the best approach is to survey a large number of firms and industries and to link those firms to administrative datasets identifying firm- or industry-specific policy changes.

3. The GBPS should sample a consistent set of establishments and firms.

As we have stated above, the establishment is the appropriate level of observation for most tactical activities and decisions. The reason is, again, that measurement at the establishment level reduces the degree of aggregation and problems resulting from unobserved heterogeneity. For strategic decisions, the firm is often the appropriate unit of observation. In our discussion above, we noted which data are best measured at the establishment level and which at the firm level.

4. The GBPS should be designed with a core/module structure. It should have a large enough sample of firms in its core to allow analysis of the effects of policy on business strategies over a wide range of industries. Add-on modules could over-sample firms in specific industries or geographic areas or explore particular subjects of interest, thus enhancing the analytical potential of the GBPS.

5. The GBPS should allow for detailed surveys or census modules of the following key industries: wholesale and distribution services, retail trade services, IT-using and communications industries, financial services industries, and electronics and computer industries.

It was the view of the committee that certain sectors – wholesale services, retail, IT and communications, finance, electronics and computer industry – were of sufficient potential importance to Canada's innovation performance and sufficiently badly understood, that a thorough examination of these industries was warranted.

6. Small sub-committees of experts should be formed to begin to address the survey design and implementation issues such as allocating questions or sub-samples into the planned architecture of Core+Module.

These sub-committees could consist of three experts, one from the academic community, one from Industry Canada and one from Statistics Canada. The role of these sub-committees would be, first, to identify those data that are currently collected in existing surveys. The group would identify the survey and survey questions that would be relevant for the GBPS and identify whether the existing survey questions elicit the information relevant for the GBPS's purposes. This step is required both to determine issues of data linking and to narrow down as much as possible the set of new survey questions needed for the GBPS.

These sub-committees would also work on decisions as to what data would represent the core of the GBPS – data that would be sampled continually and form the base longitudinal sample – and what data would be collected as special modules. The sub-committees would address both the issue of initial module choice and issue relating to integration of the core and module elements. The sub-committee could also be involved to enhance the current and future potential of the GBPS to support new policy research issues.

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Appendix A: Comprehensive listing of strategic elements and tactical activities

A.1 Firm and Establishment Characteristics

A list of such characteristics should include:

- Age of firm or establishment;
- Single establishment or multi-establishment firm;
- Size of firm or establishment, by employment and sales;
- Description of major activities by sources of revenues and industry classification;
- Ownership structure – proprietorship, partnership, subsidiary, and for publicly held company general information about stock listings.

A.2 Value Strategies and Tactical Activities

Strategic value decisions are ones that relate to the sales and product management vision of the firm. They define the firm's market position as regards product differentiation branding, price / value positioning, service provision and the like. They define the framework in which the tactical marketing decisions are made and so impose constraints, along with the market environment, on the extent to which the tactical decisions allow the firm to capture unit value.

Although some of these strategic decisions will generally be made at the level of the firm, because these strategic market decisions are made in light of the market environment in which the firm operates some of these strategic decisions can be delegated at the establishment-level to reflect local market conditions. Accordingly, sampling here could be done at both level of a firm.

A.2.1 Value Strategies

Our list of value strategies is:

- Quality branding vs. value branding – Does the firm position its product(s) (or what fraction of its products) as a high quality, high price branded product or a low price, value for money product?
- Horizontal diversification: Few or many varieties – Is the product provided with many varieties or relatively few varieties?
- Product life cycle – Does the product have frequent model changes, upgrades / improvements or does the product have a relatively stable and long life cycle?

- Market leader or follower – Is being first to market an important element of your market strategy or is your strategy to be a market follower and compete on price?
- Market reach – Is the product marketed locally, regionally, nationally, internationally?
 - Geographic selling strategy
 - sold by company
 - sold by contracted selling agents
 - sold to market
- Market segmentation targeting (is the firm focusing on specific classes of customers?)
- Price policy
 - Cost-based pricing (mark-up over costs)
 - Competition-based pricing (price based on competitors' pricing, either price leader or price follower)
 - Value-based pricing
 - Price discrimination practices – geographic, bundling, trade promotions, non-linear pricing, introductory pricing, sales
 - Use of auctions and competitive bidding
- How important are complementary products and services (after sales services, warranties, financing) for the firm's sales?

A.2.2 Tactical Value Decisions

The tactical market decisions involve the day-to-day, quarter-to-quarter decisions on prices, selling activities and the like that implement /operationalize the market strategies and that operate within the constraints imposed by these strategies. In general, these decisions would be sampled at the level of the establishment.

Our list of tactical value decisions is:

- Sales revenues
 - Domestic by product / establishment
 - Foreign by product / establishment
- Number of products and services offered and percentage of sales by most important products and services
- Mark-ups/mark-downs
- Percentage of sales under contractual arrangements
- Sales, marketing, and advertising expenditures, by product, domestic and foreign
- Other selling costs, by product, domestic and foreign
- Number of sales employees, domestic and foreign
- Sales employee compensation, domestic and foreign
 - Salary
 - Commissions
 - Bonuses

- Other
- Location of sales offices / distribution centres

A.3 Operational Strategies and Tactical Activities

Strategic decisions are ones that relate to control and decision making within the firm. These can be at the level of ownership of the firm itself, decision making authority across establishments and /or across functional areas within the firm. They can relate to different elements of the firm's product line or across the elements of the supply chain.

In general, we view these strategic elements as being determined at the firm level and affecting activities at the establishment level. For strategic activities, sampling would be at the level of the firm.

A.3.1 Operational Strategies

Our list of operational strategic decisions is:

- Ownership Structure
 - Subsidiary of foreign company or Canadian company – This status affects the companies access to innovations of parent, access to managerial knowledge of parent, potential access to capital, all allowing cost reductions. On the other hand, foreign ownership may result in less knowledge of local conditions, less attention to the local market and so higher costs of operations (see Markusen (2002) and Caves (1996)).
 - Publicly owned or privately held – This status affects access to capital for innovation as well as extent of owner autonomy, market discipline, focus of management on profitability
- Decision Structure
 - Headquarters localization
 - Divisionalized or centralized decision making (e.g. is the firm managed and monitored as separate profit centers): Divisionalized decision making creates strong incentives for division profitability but these incentives may affect incentives for division to provide complementary services to other divisions: An inventory division's incentives are to keep inventory low to hold down its costs but this damages a sales division's ability to provide quick and reliable service to its customers. Centralized decision making has weaker incentives for generating profits but this may work better with complementary services (see Roberts (2004)).
 - Divisions according to product line or functional area
 - Centralized at regional, national or international level
 - Among value, cost and innovation tactical, what is centralized and what divisionalized

- Supply Chain
 - Backward and forward vertical integration – Specialization and market transactions are effective methods for reducing costs and so vertical integration is potentially cost increasing. On the other hand, vertical integration can potentially affect incentives to invest in relationship specific assets, avoid hold-up and provide control that is valuable at reducing costs (see Lafontaine and Slade (2007)).
 - Acquisition or divestiture of vertically-related assets and activities
 - Ownership and control arrangements of vertical relationship
- Production
 - Flexible manufacturing vs dedicated manufacturing
 - Inventory policy: just-in-time or traditional
 - Performance monitoring

A.3.2 Tactical Cost Decisions

Tactical cost decisions involve the day-to-day, quarter-to-quarter business decisions involved in producing the product line and that are implemented within the structure provided by the strategic decisions. The tactical decisions ultimately determine the realized value of unit cost while the strategic decisions create the framework in which the tactical decisions are made and so impose constraints on the extent to which the feasible unit cost can be achieved.

Most of the tactical operations activity would be measured at the establishment level. By and large, these activities are ones that are already measured in other surveys and need only be linked to the GBPS.

Our list of operational tactical decisions is:

- Materials purchases
 - Materials purchases from owned suppliers vs purchases from independent suppliers
 - Materials sales to owned establishments in the same product category vs sales to independent establishments in same product category
 - Materials sales to owned establishments in other product categories vs sales to independent establishments in other product categories
 - Purchases of services (HR, customer relations, accounting, finance, supply chain management, other business services) from independent providers vs internal expenses on each.
- Plant and equipment spending
- Number of production employees, their occupations and education.
- Number of non-production employees, their occupations, and education.
- Production location
- Compensation, production and non-production employees
 - Collective bargaining agreement

- Wages
- Salary
- Bonuses
- Stock options
- Other compensation
- Rent and land costs
- Training expenditures
- Other management practices such as HR management practices.

A.4 Innovation Strategies and Tactical Decisions

Innovation strategies involves decisions regarding the enterprise's focus on product, process, marketing and organizational innovations. These strategies enhance the long-term operational and value strategies pursued by the firm. Such strategic decisions involve the location of innovative/co-invention activities both geographically and in terms of decision making authority on the focus / direction of innovation, how innovation/co-invention within the supply chain is managed and how innovation/co-invention activities within the firm are managed.

A.4.1 Enhanced Operational Strategies

Our list of innovation enhanced cost strategies is:

- Focus: Process or organizational innovations
- Are new process creation/technology adoption decisions made at the division level, or centrally (either at the national HQ or at the international HQ)? – The division may have better information regarding relevant technologies and needs and may have greater incentives to “get the choice right”. The central decision maker may take account of externalities that the process innovation has on other parts of the business that the division may ignore. As well, the central decision maker may better knowledge from related technology adoption decisions.
- Process Innovation: parts, materials, equipment – Is innovation left to supplier, done by firm or done through JV or other collaborative arrangement with supplier? – Different arrangements provide different degrees of IP control and control of revenues from innovation. These affect incentives to exert effort toward innovation. These different arrangements also exploit different knowledge sets and provide different issues in terms of hold-up. As a result, the different arrangements present different incentives to invest in innovation (see Mowery, Oxley and Silverman (1998)).
- Process Innovation: Downstream / distribution innovation – Is innovation/co-invention left to supplier, done by firm or done through JV or other collaborative arrangement with supplier?
- Process Innovation; Design vs development – What is done internally? What is done externally?

- Co-invention – Is the strategy to adopt inventions created externally and to modify for firm’s use?
 - Where in the firm is the purchase decision made?
 - Where is the technology used and how does it compare to purchase decision?
 - Who is responsible for implementation and how does this compare to the other two?
- Financing – The firm’s ability to access capital can affect its ability to successfully innovate.
 - Debt financing
 - Equity financed
 - Internally financed
 - Venture capital and other non-traditional forms of financing

A.4.2 Enhanced Value Strategies

Our list of innovation enhanced value strategies is:

- Focus: Product or marketing innovation
- Quality upgrading vs horizontal differentiation
- Focus on specific attributes or broad general features of products and services
- Is product development done internally or externally – Internal product development can control IP in a way that external development may not. On the other hand, external developers may bring greater expertise or lower costs than an internal development team. External development may also allow for risk sharing
 - If internal, is development done at division or centrally?
- Are new product design decisions made at the division level, or centrally (either at the national HQ or at the international HQ)? – The division may have better information regarding market conditions and may have greater incentives to “get the design right”. The central decision maker may take account of externalities that the design has on other parts of the business that the division may ignore. As well, the central decision maker may better knowledge from related product design decisions.
- Product or customer attributes segment focus.
- Intellectual property strategy – Do you patent innovations, use trade secrets, or open-license innovations? These regimes affect the ability to capture value and so the incentives to invest in innovative activity
- Licensing strategy – Does the firm seek to cross-license?
- Financing – The firm’s ability to access capital can affect its ability to successfully innovate.
 - Debt financing
 - Equity financed
 - Internally financed
 - Venture capital and other non-traditional forms of financing

A.4.3 Tactical Innovation Decisions

Tactical innovation involves the activities that are undertaken in producing innovation within the strategic framework.

Our list of tactical innovation activities is:

- R&D spending, by product, domestic and foreign
- License payment, by product, domestic and foreign
- License receipts, by product, domestic and foreign
- Employment of scientists and engineers
- Patents filed, acquired, and renewed
- IT purchases, domestic and foreign
- Spending on advanced technologies, domestic and foreign
- Location of R&D facilities
- Payments to licence holders for consulting

A.5 Market and Policy Environment

All of these strategic and tactical decisions are made in and are affected by the market environment in which the firm and its upstream / downstream providers operate. Further, the ability to capture value, and so to innovate, is affected by this environment. As a result, we need to measure the relevant features of the market environment to identify the impact that these features have on strategy, tactics and innovation. Ideally, these features would be measured at the establishment level.

Our list of market and policy environment features is:

- Industry Structure
 - Product and geographic markets
 - Size and location of customers
 - Size and location of competitors
 - Scope and scale of markets (imports, exports)
 - Demand size and growth
 - Demand uncertainty
 - Product life cycle – mature versus new industry
- Competition Intensity
 - Final and intermediate product features
 - Competitors product characteristics (product and geographic attributes)
 - Performance of competitors
 - Prices, quantities and revenues
 - Exit costs
 - Entry and exit rates

- Barriers to entry:
 - Brand loyalty
 - Absolute cost advantages and economies of scale (technological)
 - Switching costs (e.g. customer contracts)
 - Government regulation
- Market Performance
 - Revenues
 - Gross and net profits
 - Profit margins
 - Productivity
 - Exits (acquisitions, bankruptcies)
 - Fraction of sales coming from new products
 - Staff turnover and morale
- Government Policies
 - R&D, and IP policy
 - Business taxation policy
 - Competition policy
 - Trade policy
 - Labour market policy.