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WORKING PAPER

**THE DEVELOPMENT OF
STRATEGIC ALLIANCES IN
CANADIAN INDUSTRIES:
A MICRO ANALYSIS**

*Working Paper Number 13
October 1996*



Industry Canada

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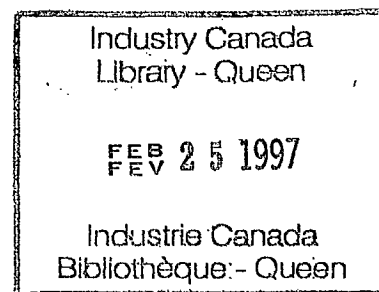
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THE DEVELOPMENT OF STRATEGIC ALLIANCES IN CANADIAN INDUSTRIES: A MICRO ANALYSIS

by Sunder Magun, Applied International Economics

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EXECUTIVE SUMMARY

Strategic partnerships come in many forms, ranging from precompetitive R&D consortia and co-production and co-marketing partnerships to cross-licensing and cross-equity agreements that do not result in a separate entity and equity joint ventures that do result in the creation of new legal entities.

The more obvious reasons for the emergence of strategic alliances in Canada and other industrialized countries are related to economies of scale or scope, resource pooling, and risk and cost sharing among alliance partners. But the driving forces behind the growth of alliances are more subtle, deeper, and more permanent. They include globalization of the world economy, systemic technological change, and the growing acceptance of the view that competition, by itself, does not necessarily ensure optimum, innovation-led growth. In effect, both competition and cooperation between individual firms are needed to ensure such growth in a dynamic, uncertain world

The emergence of intense global competition, the high cost of R&D, and the need for complementary specialized inputs and skills have forced firms to alter their business strategies and to revise the scope and organization of their value-added activities. Their strategic goal is to create organizational flexibility in such "value-chain" activities as R&D, manufacturing, and distribution channels. Several firms have secured this flexibility by participating in a number of strategic alliances. Accordingly, developing organizational flexibility has resulted in the rapid growth of strategic alliances.

Global competitive pressures, the large and rising costs of R&D, and the faster rates of product obsolescence have increasingly induced large firms to form cross-border alliances. Indeed, a number of individual firms participate concurrently in a large number of international technology consortia in an effort to secure complementary technologies, to reduce the innovation time span, and to share risks in advanced technology development.

Interfirm alliances are not a new phenomenon: joint ventures have a long history in industrial organization. What is new, of course, is their relative significance as an *organizational form* in which the emphasis is on flexibility, on the alliance members' ability to generate innovation-led growth, and on the group synergy that alliances foster among members and that enables firms to combat intense international competition resulting from the globalization of the world economy and from technological advances. Moreover, government attitudes towards and expectations about the role of interfirm cooperation in promoting innovations or in sustaining or improving competitive advantage have changed radically. In the past, governments used to believe that interfirm cooperation was harmful to the economy because of its anti-competitive

effects. As a result, the practice of interfirm cooperative agreements was discouraged directly or indirectly. The government stance today is radically different: most business alliances are now seen as beneficial to the economy and are being promoted by various policy initiatives. For instance, technology consortia are considered as the most effective mechanism to advance "frontier" technology.

When a firm enters into a strategic alliance, it is not motivated by a single goal but by a number of objectives. Through alliances, the firm may be seeking to gain access to new markets or new technologies, to cope with escalating R&D costs, to speed product or process development, or to attain cost competitiveness. More than half of the respondents indicated that their primary goal was to gain access to new markets in order to build global or domestic capabilities. This results largely from the small size of Canada's domestic markets. Several Canadian companies have grown by extending their markets into foreign countries through participating in strategic alliances. This growth strategy is particularly common among companies that produce niche products (software companies, for example). Two other important reasons why Canadian firms join strategic alliances include gaining access to new technologies or new resources, and reducing financial risks.

Canadian companies take part in several types of strategic partnerships. The most important include joint ventures, research consortia, and co-marketing. Joint ventures predominate with 27 percent of the total alliances, followed by R&D consortia with 15 percent, and co-marketing with 14. Cross-equity alliances, on the other hand, are not a popular form of partnership in Canada. Joint ventures are mostly found among firms in mining, in construction, and in oil, gas, and power, whereas research consortia are mostly seen in informatics, electronics, and computers. Almost three quarters of R&D consortia are observed among companies in this group. Most co-marketing and cross-licensing alliances are also found in this group, as well as in telecommunications.

Among all strategic partnerships in Canada, vertical alliances with distributors preponderate. These are observed mainly in informatics, electronics, and computers, and in telecommunications: four fifths of alliances with distributors are found in those two industries, which specialize in niche products and sell them through a worldwide network of distribution alliances.

In our survey of Canadian companies, sampled firms were asked to identify and rank the specific effects of strategic partnerships on their competitive advantage. The most important impacts include: improving the company's market and resource access; enhancing strategic growth by building world-class capabilities; and building financial strength by producing more incomes and lowering risks. The least important effects are related to increasing exports, increasing internal and external investments, and building the company's knowledge and skills by reducing the learning curve at all stages in the production process. These results are indeed surprising: one would have expected those least important effects to be ranked higher by Canadian firms.

The survey also enquired whether alliances were successful or not. Of all the alliances in which Canadian firms have been involved since 1980, two thirds were reported to have been successful. Companies gave several reasons for the success of their alliances. The three key reasons are: 1) effective support from senior management; 2) a clear sense of mission and objectives; and 3) a strong leadership team with personal commitment to the alliance's success. Teamwork, purpose, and trust among participants at all levels also ranked high. Canadian companies gave the lowest rating to such reasons as shared values and cultures among alliance partners, and incentives to share knowledge and skills.

Respondents were also asked to identify the reasons for alliance failures and to rank these reasons by importance. Some of the key reasons include a weak leadership team without strong commitment, false expectations about partners' capabilities, and weak support from senior management. On the other hand, such factors as ambiguous alliance mission statement, partners' values and cultures that do not match, and weak performance and review mechanism are considered as the least important reasons for the failure of alliances.

Almost all respondents believe that government can promote Canada's international competitiveness by encouraging strategic partnerships. However, that intervention should be indirect, providing only a supporting role. Several firms see a dual role for government. First, it can play a brokerage role by connecting potential partners. And second, it can provide, through its trade offices, background data about potential foreign partners. All Canadian firms believe strongly that modern alliances differ from what used to be called "coalitions" and that they do not create anti-competitive effects. Modern strategic alliances emphasize flexibility, the ability to generate innovation-led growth, and group synergy. They enable firms to combat intense international competition resulting from the globalization of the world economy and from rapid technological advances.

The growth of strategic alliances with foreign companies raises a number of difficult, troubling problems for governments about such issues as national sovereignty, national defence, and the control of the national economy. What is the nationality of cross-border alliances? Who owns the products and process technologies developed by cross-border R&D consortia? In the national-defence area, most governments seek to control strategic industries such as computers or telecommunications, but cross-border alliances in these industries, which are rapidly growing, have eroded that control. These are difficult issues; it will take some time to solve them because they will have to be handled at the multilateral level.

1. INTRODUCTION AND RESEARCH QUESTIONS

Over the last two decades, a number of radical changes have occurred in Canadian industrial organization. These changes have to do with the way individual firms organize their production and the way they transact business with other firms. Some authors believe that these changes have ushered in "a new trajectory of market capitalism" (Dunning, 1995). This new phase of market-based capitalism is driven by two global forces. First, there have been a series of systemic technological and political developments, such as a new generation of telecommunication advances; the decline, and in some cases the disappearance, of central planning in Eastern Europe and China; and the rise of Japan and other newly industrialized Asian countries as economic powers in the Pacific Rim region. Market-based capitalism practised by these countries is different from that practised by Canada and other Western nations. Second, many value-added activities are no longer restricted by national boundaries and have become global in scale and scope. This has considerably enhanced economic interdependence between nations and has resulted in greater global competition.

These developments have generated a new paradigm of industrial organization, in which competitive markets, by themselves, do not guarantee "an optimum innovation-led growth path in a dynamic and uncertain world" (Dunning). This is, in part, due to the growing acceptance of a new perception of the linkages between technology and economic growth: technology is now treated as an endogenous factor in the economy; it is influenced by economic forces and can be manipulated by economic policies. The new paradigm also contends that a nation's comparative advantage and its resource endowments are independent: in a knowledge-based economy, comparative advantage depends more on innovations and on the skills of management and labour, and it can be shaped by government policy (Lipsey, 1993).

As a result of the new paradigm, individual firms are increasingly realizing that, in a knowledge-based economy, they must not only compete fiercely but also cooperate actively with one another in order to advance their economic, especially strategic, objectives. Firms now strongly believe that crucial knowledge and specialized capabilities must be embedded in their company culture, internal routines, working relations and business practices, and that they can learn from one another by collaboration. Japanese and South Korean firms have taken the lead in interfirm collaboration and have greatly benefited from such popular interfirm collaborative groups as *keiretsus* and *chaebols*. Some authors have referred to the industrial organization practised by Japan and other newly industrialized Asian countries as "alliance capitalism" (Gerlach and Dunning).

Most early alliances were between firms in different countries and were formed by multinational enterprises based in the Triad – the United States, the European Economic Community (as it was then known) and Japan. In addition, alliances were mostly found in core and strategic industries, such as information technologies, biotechnology and advanced materials.

Now, shifts are taking place: there have been rapid increases in the formation of alliances among domestic firms and in other sectors of the national economy. However, information technology and biotechnology sectors still dominate in the development of interfirm cooperation.

Although Canada was a late starter in adopting alliance capitalism, Canadian firms are now actively seeking domestic and foreign partners and participating in various forms of interfirm cooperative agreements. As the development of alliances is relatively new in Canada, little empirical research has been undertaken to explain the rapid growth of interfirm collaboration in Canadian industries. This is mainly due to two factors. First, in the past most alliances used to be tactical but today they tend to be strategic. As a result, many firms tend to keep their data about strategic alliances or partnerships confidential. Second, no theoretical or analytical frameworks have been designed to explain the existence and rapid growth of alliances in recent years.

The purpose of the present study is to fill this research gap. In particular, it will attempt to answer the following questions about the objectives, role, effects and performance of strategic alliances in Canadian companies:

- What are the principal objectives of strategic alliances, and what are the various forms of alliances in Canada?
- What strategic approaches do Canadian companies adopt in order to build global market capabilities, and what is the role of strategic alliances in these approaches?
- What are the effects of strategic alliances on the company's competitive advantage?
- Why do some alliances succeed and others fail?
- Should government encourage the formation of strategic alliances in Canada?

The rest of the study is divided into four sections. Section 2 introduces the conceptual framework used in the paper and describes the sources of statistical data. Section 3 discusses some general factors driving the growth of strategic alliances or partnerships in Canada. In section 4 are presented the specific objectives and various forms of strategic alliances in Canada. As well, this section discusses the effects of strategic alliances on a company's competitive advantage or bottom line, and assesses the performance of strategic alliances by analyzing why some alliances are successful while others are not. The study concludes by deriving some policy implications from the empirical research on the structure and development of strategic alliances in Canada. The final section answers the question whether, or in what way, the Canadian government should encourage the formation of alliances in the country.

2. THE SETTING

A Conceptual Framework

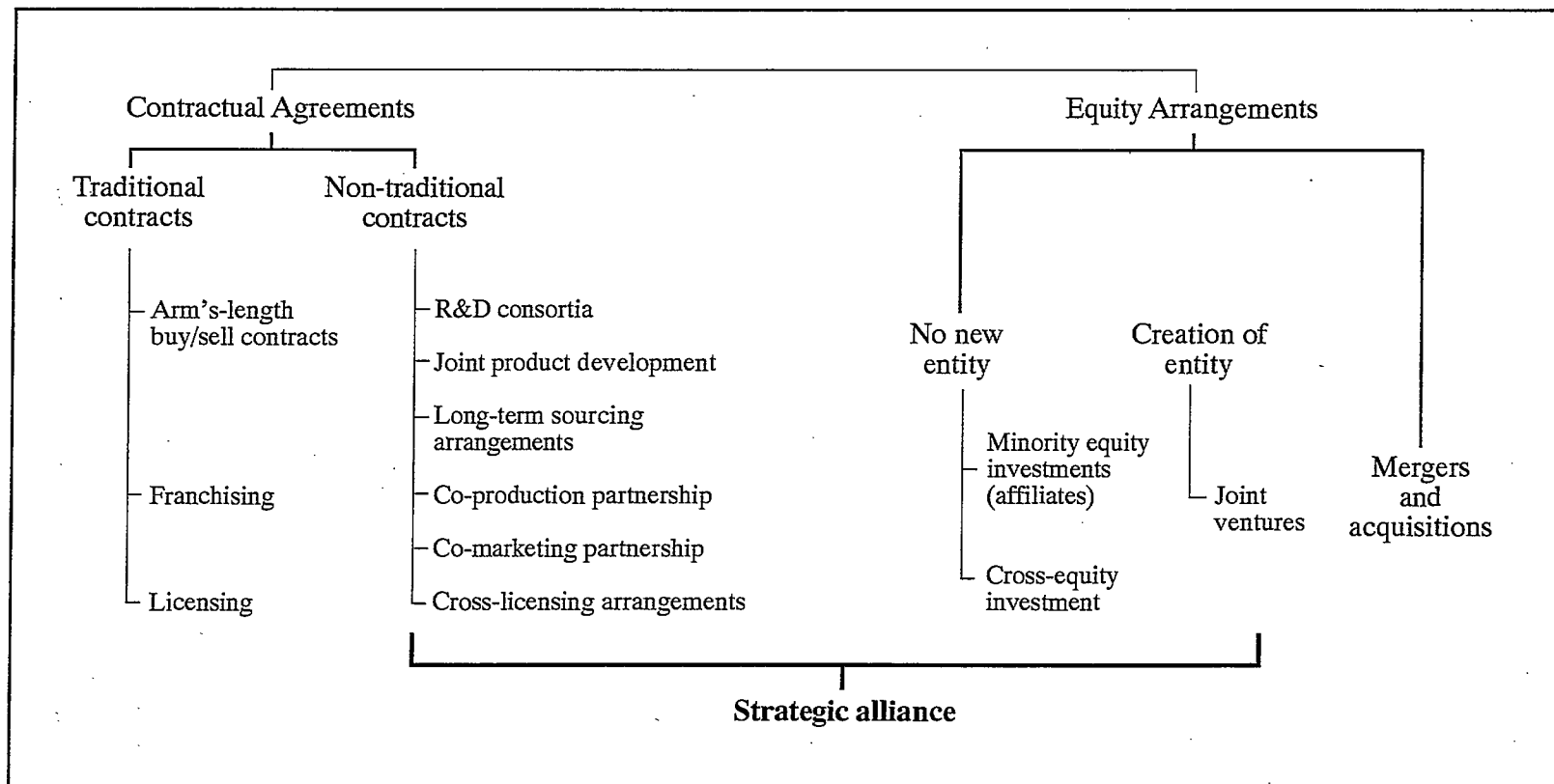
A strategic alliance is one in which two or more firms combine specific business activities in the pursuit of a common goal (Yoshino and Rangan; Culpan). The interfirm agreement includes four essential elements. First, it increases the effectiveness of the participating firms' competitive business strategies "by providing for the mutually beneficial trade of technologies, skills, or products" (Yoshino and Rangan, p. 4). Second, the members of the alliance remain independent after negotiating the collaborative arrangement. Third, the members of the alliance *share* control over the performance of its functions and tasks, and also share in its benefits. Finally, the partners make a strategic contribution to the alliance, such as knowledge, technology, critical skills, equity capital, or products.

Strategic partnerships come in many forms, ranging from precompetitive R&D consortia and co-production and co-marketing partnerships to cross-licensing and cross-equity agreements that do not result in a separate entity and equity joint ventures that do result in the creation of new legal entities (Figure 1). They exclude such traditional contractual arrangements as arm's-length buy/sell contracts, franchising, licensing, and mergers and acquisitions.

While interfirm alliances are not new, the partnerships being formed today are radically different from those of the past in several ways. In the past, joint ventures between Canadian companies and foreign firms were often a means of gaining access to foreign markets in an effort to circumvent high trade barriers, such as high tariff rates or restrictive non-tariff barriers. Today, interfirm partnerships have a more strategic goal: they are directed towards promoting innovation-led growth and thus enhancing the competitive advantage of all alliance members. As well, the range of interactions between partners is much greater and much deeper than in the past. Alliances today exist between producers and their suppliers and their distributors, between rival firms and between firms that are totally unrelated.

The new alliances also differ from the earlier ones by their governance structure. In strategic alliances, decisions rest on a consensus among the participants, not on "a pyramid of delegated authority" (Dunning, p. 470). Each participant is committed to improving the interests of the alliance and follows a code of behaviour that rests "upon mutual trust, reciprocity and forbearance" (Dunning, p. 470). For example, in an alliance between a firm and its suppliers, the latter are expected not only to produce inputs or parts to agreed specifications but also to work actively with the purchasing partner to improve the quality and/or lower the price of their products. Similarly, in a partnership between a firm and its client distributors, the latter are expected to contribute actively to the improvement of products produced by the alliance partner.

Figure 1
Range of Interfirm Strategic Alliances



There are no specific theories of the economics of industrial organization that explain the extent and nature of recent alliance activity. However, the theories advanced by business economists and management experts to explain the growth of joint ventures can be extended to apply to other forms of strategic alliance (Culpan, 1993, pp. 15-18). The three major paradigms comprise transaction-cost theory, organization theory, and business strategy.

According to transaction-cost theory, developed by Williamson (1975), firms choose interfirm links that minimize the sum of transaction and production costs. Transaction costs include the expenses incurred for preparing and enforcing interfirm contracts. For example, if the supply options available to the firm are traditional arm's-length buy contracts or long-term sourcing partnership agreements, it will choose the option that will result in a minimum cost arrangement. However, while transaction cost theory explains the development of a limited number of strategic alliances where "firms pursue reactive strategies" (Culpan, 1993, p. 15) – for example, joint marketing, joint manufacturing and long-term sourcing agreements – it does not explain the growth of such strategic partnership as joint R&D agreements, joint product development, standards setting/research consortia and joint market development. These strategic alliances often follow proactive strategies, and they currently predominate in the global market.

The organization theory contends that a firm will participate in an interfirm alliance in order to obtain resources from the other firms. Resource interdependence creates uncertainty, and firms use alliances "as a means for stabilising the flow of resources that a company needs" (Culpan, 1993, p. 16). While alliances certainly reduce the uncertainty confronted by firms, this theory also has limited applications. It explains aptly the growth and forms of some alliances, such as long-term sourcing or cross-licensing arrangements, but it is inadequate in explaining a number of new, growing strategic alliances, such as equity swaps or minority equity investments.

The third theoretical approach, made popular by Michael Porter (1980, 1985, 1990) is associated with the goals of business strategy. Porter suggests three general business strategies to contend with fierce competitive forces in the marketplace and to outperform competitors in the industry – "low-cost leadership, product differentiation, and focus." Strategic alliances play an important role in achieving these goals. For instance, while joint manufacturing arrangements or technology consortia create relative cost advantage by generating economies of scale, joint product development or cross-licensing arrangements result in differentiated products. Similarly, co-marketing arrangements often lead to segmented markets where given products appeal "to a limited group of consumers or industrial buyers" (Culpan, 1993, p. 17).

Porter and Fuller (1986) have also pointed out the international strategic dimension of alliances, or "coalitions," as they call them. The global firm must configure the various locations of its activities across different national markets and then coordinate them. "Coalitions are a means of performing one or more in combination with another firm instead of autonomously – they are thus a means of configuration" (Porter and Fuller, 1986, p. 321). In general, the firm performs five discrete functions: developing technology (R&D), producing, marketing, selling, and servicing in the value chain. Alliances are formed to perform any function or a combination of activities in the value chain. "Coalitions arise when performing an activity with a partner is

superior to performing the activity internally on the one hand, and to reliance on arm's-length transactions or merger with another firm on the other" (Porter and Fuller, 1986, p. 322).

Although those three theories provide some insights into the growth and structure of strategic alliances, they are not broad enough to illustrate fully "the details and dynamics of such partnerships in various forms" (Culpan, 1993, p. 18). As a result, a new analytical framework is needed to guide us in conducting empirical research about the motives, structure, and performance of strategic alliances in Canada.

The analytical model developed here is portrayed in Figure 2. It is composed of eight elements: general economic and technology trends; new corporate strategy-options for growth; strategic objectives in alliances; general motives of alliance participants; specific alliance objectives; forms of alliance agreements; modes of strategic alliances; and alliance outcomes.

In today's world, firms are faced with three alternative growth strategies: internal expansion and business start-ups (e.g., a start-up subsidiary); acquisitions and mergers; and strategic alliances. There is a trade-off between these approaches, since "no single approach ... outweighs the others in all circumstances" (Lynch, 1993, p. 33). The choice depends on the risks and rewards associated with each alternative, the firm's available resources, and the need for control. If the firm wants to expand, for instance, with full control, it will opt for either internal expansion or acquisition. The risk/reward relationship differs from company to company, depending upon the industry or the market in which the company is situated.

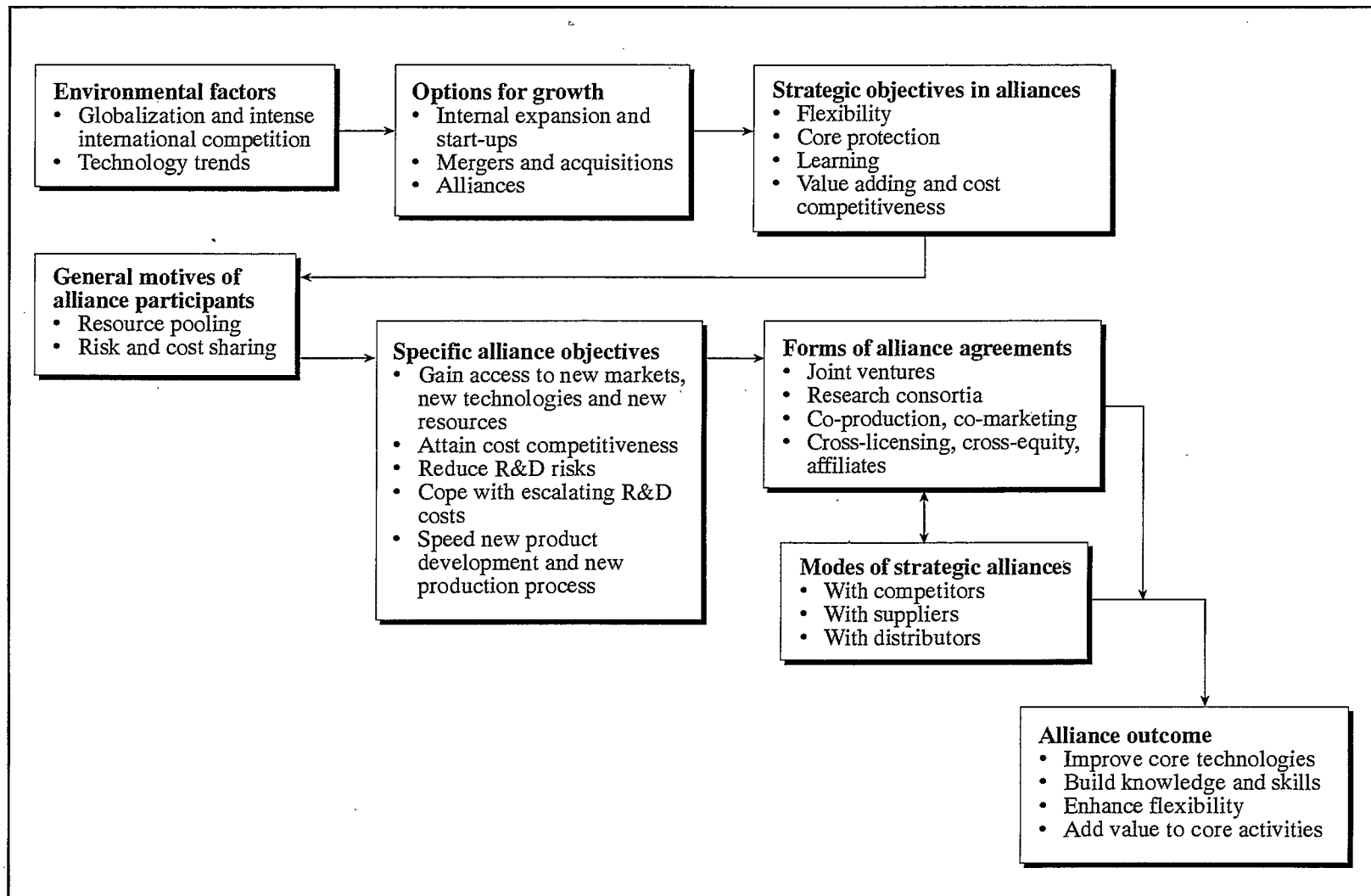
In recent years, growth through strategic alliances has become increasingly more prominent. This development is principally attributable to the fact that the world in which companies operate has changed radically. Today, companies are forced to change their priorities from a traditional emphasis on planning, control, and managed growth through internal expansion or mergers or acquisitions, and to focus on speed, innovation, flexibility, and cost. In this new environment, an alliance is considered a more effective and less expensive way of interacting with other organizations.

In deciding whether to opt for an alliance or for going it alone, the company must consider two managerial factors – cooperation and competition or, "more generally, cooperation and conflict" (Yoshino and Rangan, 1995, p. 18). If it opts for an alliance, the firm must decide to which extent it should cooperate or compete with its partner. There is a trade-off between the two managerial decisions, and the company must optimize this trade-off by weighing the relative importance of its key strategic objectives.

When a firm decides to expand through alliances, it seeks to achieve four broad strategic goals; of these, two are positive and enhance the firm's competitiveness, while the other two are defensive and prevent the loss of competitiveness.

The first of these strategic objectives is to add value to the firm activities through the alliance. The company's second objective is to learn from its alliance partner and, thus, to

Figure 2
A Conceptual Framework for Strategic Alliances



augment its core competencies. Learning is an important strategic goal for every company that seeks to maintain or improve its competitiveness in the marketplace. Learning helps the company to generate product and process innovations.

For defensive purposes, the firm must maintain strategic flexibility while participating in the alliance. Overdependence on the interfirm partnership would restrict the company's ability to manage diverse strategic risks that are associated with sudden changes in technology, competitiveness, and politics. In a world of rapid change and rapid obsolescence, the firm always keeps its options open and makes it sure that the strategic partnership does not in any way weaken its strategic options for adjustment to external environment.

The final objective is related to the protection of the firm's core competencies or strategic advantages. Upon entering the alliance, the company must guard against the appropriation of its advantages by its partner. While it is true that the company's competitive advantage lies in proprietary knowledge that can be protected through patents, the firm also derives a substantial portion of its competitive edge from its accumulated knowledge in R&D, manufacturing, and marketing. Such knowledge is not codified and is embedded in company routines, procedures, organization structures, and culture. The confidentiality and protection of this knowledge is vital for the firm's strategic goals of survival, success, and growth. Therefore, the protection of core competency weighs heavily as an explicit strategic objective in any cooperative arrangement.

The role of these strategic objectives varies among different types of alliances. For example, in vertical, value-chain, interindustry alliances, such as between producers and their suppliers or distributors, the extent of organizational interaction between alliance partners is small and the potential for conflicts is low. The partners belong to different industries and are not rivals in the marketplace. In such alliances, therefore, maintaining flexibility and adding value are more important than protecting core competencies and learning.

On the other hand, in the case of horizontal, intraindustry alliances, the partners are direct rivals in the final product market. Examples of this type of interfirm links include the alliances between General Motors and Toyota, and between Ford and Nissan. The degree of interfirm interaction and the potential for conflict are both high. In horizontal alliances, the firm attaches much greater strategic priority to protection of core competencies and learning than to flexibility and adding value.

In the case of "precompetitive" alliances, such as R&D or technology consortia, the members belong to different, unrelated industries and work on well-defined, narrow projects, such as developing a new generic process of production or a new specific product. Each partner contributes a specific skill or knowledge to the project. Risks and resource requirements are so high that no member is interested in going it alone. In these types of alliances, the interaction between partners is very limited, being mainly confined to researchers. But the potential for conflict is relatively high because the partners could become rivals after the successful completion of the project. Rivalry between alliance members becomes critical when the project is approaching the completion stage and the commercialization of its output begins. In this type of alliance,

therefore, the members are more concerned about the protection of their core competencies. Moreover, the new technology being explored represents only one of the many possibilities, so that maintaining strategic flexibility gets a higher priority in designing or managing technology consortia. To keep their options open, members often participate concurrently in several R&D links.

Data Sources

At present, there is no micro database describing the alliance activities of Canadian companies. To compensate for that, the relevant data has been collected from primary sources – i.e., from a sample of Canadian business firms that have formed alliances with other domestic and/or foreign companies.

The sample was drawn in a two-step procedure. First, the textual fields of Compact D/Canada CD-ROM file – which contains financial and management information about 9,871 Canadian companies – were searched with words and expressions such as “alliance,” “partner,” “strategic alliance,” “strategic partner,” “joint venture,” etc. The search revealed that of the 9,871 firms, fewer than 10 percent (898) have formed alliances, most of them major corporations whose stocks are traded on Canadian stock exchanges.

The 898 firms were then distributed by city and by industry. From among these location/industry groups, 130 companies were selected for personal and telephone interviews, with greater weight being given to new emerging sectors (such as the information, telecommunications, biotechnology, and pharmaceutical industries), to small and medium-sized enterprises (SMEs), and to larger cities (Montreal, Toronto, Vancouver, and Ottawa) where the activities pertaining to these industries tend to be concentrated. With this procedure, it was possible to collect complete and consistent data for a sample of 75 Canadian companies that were involved in strategic alliances in 1995 (Appendix A).

The questionnaire used for the interviews appears in Appendix B. The structure of the questionnaire follows closely the elements contained in the conceptual framework for strategic alliances described above. The data collected through the interviews pertains to company profiles, objectives, and forms of alliances and to the role and performance of strategic partnerships. The survey also provides data on the government’s role in encouraging the formation of alliances in Canada.

The sample data were combined with management and financial data derived from the Compact D database; this merged data set is referred to as the “experimental group.” A similar data set was created for companies that do not participate in alliances – the “control group.” Finally, the data for the two groups were merged and the resulting data set, containing 77 firms, was used for regression analysis. It should be noted that a number of firms were lost in the regression analysis because of missing or incompatible data items in the Compact D database. This problem does not, however, affect the descriptive analysis of strategic alliances, which is mostly based on the data collected from the interview survey.

3. ENVIRONMENTAL FACTORS DRIVING THE GROWTH OF STRATEGIC ALLIANCES

Globalization of the World Economy

The more obvious reasons for the emergence of strategic alliances in Canada and other industrialized countries are related to economies of scale or scope, resource pooling, and risk and cost sharing among alliance partners. But the driving forces behind the growth of alliances are more subtle, deeper, and more permanent. They include globalization of the world economy, systemic technological changes, and the growing acceptance of the view that competition, by itself, does not necessarily ensure optimum, innovation-led growth. In effect, both competition and cooperation between individual firms are needed to ensure such growth in a dynamic, uncertain world. The three driving factors are not mutually exclusive but often overlap and reinforce each other.

The world marketplace has become more interdependent over the past four decades. Global linkages among nations have increased substantially, have become more complex, and have resulted in increasing international competitive pressures. These linkages have passed through three phases. First, international trade liberalization, carried out by dismantling trade barriers under successive rounds of negotiations under the General Agreement on Tariffs and Trade (GATT) during the 1950s and 1960s, led to substantial expansion of world trade. Second, there was much greater financial integration between nations during the 1970s and the early 1980s. This integration was driven by deregulation, privatization, and the revolution in communication and information technology. Third, the world economy entered a phase of globalization during the 1980s and the early 1990s, driven by a rising volume of foreign direct investment (FDI), accelerating technological change, rapid technology transfer between nations, and the emergence of multinational strategic alliances.

The prime agent of globalization is the multinational enterprise (MNE) that has followed global strategies to enhance efficiency and profitability along its entire production chain. The global firm organizes its business and production functions – from R&D, through input sourcing and manufacturing or servicing, to marketing – “as an internationally integrated ensemble” (Vickery, 1992). The MNE obtains its factor inputs from least-cost sources, manufactures goods and services in the lowest-cost countries, and secures and develops skills and technological expertise wherever they are available in the interlinked world economy. As the communications and transportation infrastructure improves and as information and transportation costs decline, MNEs locate “their operations wherever they can best use complementary assets to maximize their corporate positioning” (Cowhey and Aronson, 1993). The global firms are mostly found in high-technology and high-skill sectors, such as the electronics, computer, aircraft, and chemical and biotechnology industries. By rationalizing their value-added activities worldwide, they benefit from economies of scale and scope in R&D and in sourcing and production operations.

As a result, in recent years, the FDI flow has grown much faster than world merchandise trade and world output.

The other important factor that has contributed to global integration is related to the globalization of demand, which, in turn, has been driven by the emergence of major markets in the G-7 countries. These major industrialized nations have attained almost the same levels of per capita and family disposable income and, as a result, possess large mass consumer and industrial markets. There is a growing convergence of demand for consumer and industrial products in G-7 markets, where consumers demand similar types and/or quality of goods. "Youngsters in Tokyo, New York, and Cologne demand the same Walkman, the same jeans and sneakers, listen to the same music, are part of the Pepsi generation. Industrial consumers are looking for the same power-generating equipment, machine tools, semiconductor, and pollution-control systems" (Yoshino and Rangan, 1995, pp. 52-53). Equivalent levels of education among consumers, comparable physical and social infrastructures, and a high degree of mobility among people in these regions are responsible for the homogenization of demand.

As a consequence of the growing convergence of demand, markets in several products have become global. International competition in these markets is increasingly becoming fierce. The key characteristic of global competition is competitive interdependence. The entry of the newly industrialized countries has broadened the extent of global markets and added substantially to the intensity of global competition

Technology Trends

New-generation technology is much more expensive to invent than older technology was. This phenomenon is mainly attributable to shorter product cycles, greater speed of new-product introduction, and the cross-fertilization of several technical and scientific disciplines required in "frontier" development. Technological advances have raised the fixed costs of a large number of manufacturing and service activities, especially in the areas of learning and innovation. In addition, whereas it used to take, for example, 10 or 15 years before old products were replaced by new ones, today the useful life of certain products is no more than four or five years (Rosow, 1988). Sometimes, the end of the product is sudden and dramatic; in recent years, we have seen the rapid obsolescence of successive generations of computers and microchips. Thus very large capital investments are required to introduce new products quickly, especially in the high-tech industry and the capital-intensive goods sector.

Recent technological advances have increased the interdependence between certain technologies that need to be employed jointly to manufacture a given product. Several examples of complementary technologies can be found in modern manufacturing systems. The manufacturing of large commercial aircraft, for example, requires the combined skills and knowledge of metallurgy, aeronautical engineering, and aeroelectronics. Similarly, today's medical advances need the technological resources of pharmacology, biotechnology, laser technology, and genetic engineering. As well, the development of modern telecommunications

equipment requires the latest innovations in carbon materials, fibre optics, computer technology, and electronic engineering.

Another important dimension of modern technological advances is related to the growing significance of multipurpose technology systems, such as robotization, informatics, and biotechnology. Although the introduction of these systems has certainly contributed to productivity growth in manufacturing and has brought flexibility in production processes, they are costly to make, maintain, and upgrade.

In recent years, the patterns of international trade have altered substantially. Since the early 1980s, rapid expansion in foreign trade has occurred in manufactured products, and within the manufacturing sector, a higher proportion of trade among industrialized countries has been observed in high-value-added high-tech products. International competition in high-tech trade is intense, and the battle among firms to maintain or increase market share is becoming increasingly more fierce. In these market-share fights, technology becomes a critical factor in the race to maintain or enhance the competitive edge, which puts greater pressure on global firms from advanced industrial countries to do more R&D and to innovate faster in the global marketplace.

The emergence of intense global competition, the high cost of R&D, and the need for complementary specialized inputs and skills have forced firms to be more innovative or "more dynamically competitive" (Dunning, 1995, p. 468). Growing firms have embarked "on a path of continuous innovation to keep abreast or, preferably, forge ahead of equally innovation-conscious rivals" (Yoshino and Rangan, 1995, p. 51). This competitive challenge has caused firms to alter their business strategies and to revise the scope and organization of their value-added activities. Their strategic goal is to create organizational flexibility in such "value-chain" activities as R&D, manufacturing, and distribution channels. Several firms have secured this flexibility by participating in a number of strategic alliances. Accordingly, developing organizational flexibility is "at the core of the logic of strategic alliances" (Yoshino and Rangan, 1995, p. 51).

In particular, firms have responded to competitive challenges in the global marketplace in three ways. First, they have shed, or "disinternalized," non-core activities and concentrated, or specialized relatively more, on core value-added activities where they have a strong competitive advantage. At the same time, because of the interdependence of new technologies, firms have sought to secure access to products over which they have given up control, and to influence the quality and price of these products as well as the innovation of new products. As a consequence, the shedding of non-core activities has usually been replaced, not by arm's-length transactions but by interfirm strategic alliances. These cooperative agreements have been seen as long-term sourcing arrangements or minority equity investments. They are often observed in high-tech sectors.

Second, global competitive pressures, the large and rising costs of R&D, and the faster rates of product obsolescence have increasingly induced large firms to form cross-border alliances. Indeed, a number of individual firms participate concurrently in a large number of international technology consortia (R&D consortia or joint product development partnerships) in

an effort to secure complementary technologies, to reduce the innovation time span, and to share risks in advanced technology development. In addition, firms realize that the most important contributor to value-added activities is knowledge embedded in organizational structures and operations. Embedded knowledge, which is usually not migratory, lies in company strategies, routines, operating procedures, information flows, culture, and working relations. Alliances are the most suitable mode to share embedded knowledge and, thus, to sustain and advance the alliance partners' competitive advantage.

Finally, firms have responded to competitive pressures by widening the markets for their core products. Their goal is to benefit from scale economies and thereby reduce costs. More and more companies are finding that alliances are the best mechanism for accessing rapidly growing markets, which are mostly located in newly industrialized or developing countries. Moreover, alliances (joint ventures, for example) are politically more acceptable in developing countries and provide a quick entry into unfamiliar expanding markets by companies from the industrialized world. In recent years, there has been rapid growth of joint ventures involving firms from China, India, Canada, the United States and Japan. Dunning calls the formation of these kinds of alliances "a market-positioning alliance response" (Dunning, 1995, p. 469).

In sum, interfirm alliances are not a new phenomenon: joint ventures have a long history in industrial organization. What is, of course, new is their relative significance as an *organizational form* in which the emphasis is on flexibility, on the alliance members' ability to generate innovation-led growth, and on the group synergy that alliances foster among members and that enables firms to combat intense international competition resulting from the globalization of the world economy and from technological advances. Moreover, government attitudes towards and expectations about the role of interfirm cooperation in promoting innovations or in sustaining or improving competitive advantage have changed radically. In the past, governments used to believe that interfirm cooperation was harmful to the economy because of its anti-competitive effects. As a result, the practice of interfirm cooperative agreements was discouraged directly or indirectly. The government stance today is radically different: most business alliances are now seen as beneficial to the economy and are being promoted by various policy initiatives. For instance, technology consortia are considered as the most effective mechanism to advance "frontier" technology.

4. STRATEGIC ALLIANCES IN CANADA

The two previous sections were devoted to general or conceptual issues relating to the role and development of strategic alliances in industrial organization. Here, they provide the context for an analysis of the role of interfirm cooperation among Canadian companies.

There is a perception that Canada is new to the interfirm alliance as a strategic organizational form, that strategic partnerships are mostly found among companies located in the Triad, and that interfirm cooperation in Canada is confined to a few emerging high-tech sectors. In this view, the principal participants are our few large multinational firms, and Canada's SMEs do not play any role in the formation of strategic alliances. Another perception is that, because of negative government attitudes towards interfirm cooperative arrangements, the most popular forms of alliances in Canada are precompetitive R&D consortia or joint product-development agreements.

As we shall see below, the analysis of the survey results contradict these perceptions. In fact, Canadian SMEs from all sectors are active participants in numerous forms of interfirm cooperation. In addition, the government's position on strategic alliance has now become more clear and positive. Industry Canada believes that "it is the Bureau of Competition Policy's experience that most strategic alliances do not raise issues under the [Competition] Act" (Industry Canada, 1995, p. iv).

Objectives and Structural Characteristics

When a firm enters into a strategic alliance, it is not motivated by a single goal but by a number of objectives. Through alliances, the firm may be seeking to gain access to new markets or new technologies, to cope with escalating R&D costs, to speed product or process development, or to attain cost competitiveness. The emphasis placed on each of these objectives varies from one company to another and depends, among other things, on the structure of the business strategy that the firm is pursuing. For instance, if the company's strategy is to emphasize more technology development in its value chain, it will participate more in those alliances whose primary goals are to reduce R&D risks and to speed new product or process development. On the other hand, if the firm's strategy is to focus more on marketing and sales in the value chain, it will take part in those strategic partnerships whose principal objectives are to gain access to new markets and to jump market barriers in emerging markets and regional trading blocks.

In our sample survey, Canadian companies were asked to identify the principal objectives of all the alliances in which they were involved since 1980. Their replies are summarized in order of relative importance in Table 1. More than half of the respondents indicated that their

Table 1
Principal Objectives of Strategic Alliances

	Percentage distribution of respondents
1. Gain access to new markets	53.3
2. Gain access to new technologies or new resources	37.3
3. Reduce financial risks	32.0
4. Integrate markets and technologies	26.7
5. Speed new product development	24.0
6. Reduce R&D risks or to cope with escalating technology and R&D costs	22.7
7. Attain cost competitiveness	22.7
8. Jump market barriers in emerging markets and regional trading blocks	20.0
9. Speed new production process development	16.0
10. Block competitors' move	9.3

Source: Sample survey of Canadian companies, 1995.

primary goal was to gain access to new markets in order to build global or domestic capabilities. This results largely from the small size of Canada's domestic markets. Several Canadian companies have grown by extending their markets into foreign countries through participating in strategic alliances. This growth strategy is particularly common among companies that produce niche products (software companies, for example).

Two other important reasons why Canadian firms join strategic alliances include gaining access to new technologies or new resources, and reducing financial risks. On the other hand, they are less interested in participating in alliances that are aimed only at jumping market barriers in emerging markets and regional trading blocks. This is mainly attributable to recent international trade and investment liberalization resulting from the globalization of the world economy. For example, various tariff and nontariff barrier reductions under successive GATT rounds have significantly diminished the need to jump market barriers through strategic alliances.

The participation of Canadian companies in strategic partnerships whose goals are to reduce R&D risks and to speed new product development or new production processes is relatively small. Although this finding is surprising, it can be explained by the fact that Canadian firms do not usually undertake large precompetitive R&D. "Canada does not have the culture of doing precompetitive R&D" (Kumar and Magun, Industry Canada, 1995, p. v). However, Canadian firms seem to be more active in those alliances that conduct "near-market" R&D, formed to conduct R&D with the objective of integrating technologies and markets or commercializing technologies.

Cross-Firm Models of the Motivations for Alliance Activity: An Econometric Analysis

In this section, cross-firm models are constructed to identify some general factors that determine alliance activity in Canada. The working hypothesis is that the probability of alliance participation by a given firm depends on its size, its financial strength, and its growth strategy. To test this hypothesis empirically, a logit model is employed in order to generate estimated probabilities of alliance participation.

The firm's size variable is measured by the natural log of sales ($\log s_i$), while its financial position is measured by three ratios: 1) the current ratio (CR_i) as an indicator of liquidity, 2) the rate of return on capital assets (RR_i) as a measure of profitability, and 3) the debt/equity ratio (DE_i) as an index of leverage. The firm's growth is represented by the rate of capital growth ($\Delta K/K$)_{*i*}. The export variable (E_i) is used as an indicator of whether the firm is using an export strategy to grow in the global marketplace. These variables are specified as follows:

- DV = Dependent variable = 1 if the firm participates in the alliance, otherwise 0.
- CR = (current assets) / (current liabilities).
- RR (%) = (net income before tax*100) / (total assets).
- DE = (notes & loans currently due + long-term debt, gross) / (total shareholders equity) *or* = (long-term debt, net) / (total shareholders equity), depending on the availability of the relevant data in Compact D CD-ROM.
- E = 1 if the firm exports, otherwise 0.
- $(\Delta K/K)$ = (current year total assets *minus* last year total assets) / (last year total assets)

The logit model employed is as follows:

$$L = \text{Log}_n\{(P_i)/(1 - P_i)\} = \beta_0 + \beta_1 CR + \beta_2 RR + \beta_3 DE + \beta_4 \log_n S + \beta_5 (\Delta K/K)$$

where L is equal to the *log-odds ratio* and $P = 1$ if the firm participates in a strategic alliance and $P = 0$ otherwise.

The data for estimating this model were derived from the Compact D/Canada database. A consistent database was created for 77 Canadian firms, including 55 sampled firms that participate in strategic alliances and 22 others that do not. A priori, $\log S$ is expected to have positive effects on the probability of engaging in an alliance. On the other hand, low rates of rate of return may cause individual firms to search for alliance partners. The effects of RR are therefore expected to be negative. If the firm is using an internal growth strategy based on capital investment rather than a strategy based on external growth through strategic partnerships, one would expect the effect of $\Delta K/K$ on the alliance probability to be negative. Similarly, if the firm is using export growth as an alternative approach to an alliance strategy, the effect of E should be

negative too. On a priori grounds, the impacts of *CR* and *DE* on alliance participation are uncertain: they could go in either direction.

For model estimation purposes, the database of 77 firms is divided into two subsets – a knowledge-based industry database and a traditional industry database. The knowledge-based industry database includes 37 firms that belong to such industries as computers (hardware and software), electronics, chemicals, biotechnology, telecommunications, and pharmaceuticals. The traditional industry database includes 40 firms that belong to the mining, forest products, transportation, oil and gas, and service industries, among others. Although a number of versions of the logit model were estimated, only two versions for each industry subset are displayed in Tables 2 and 3.

Table 2
Logit Analysis of the Determinants of Alliance Participation,
Knowledge-Based Sector, Canada¹
 (Coefficients with *t*-statistics in parentheses)

Independent variable	Estimated logit Model 1	Estimated logit Model 2
Constant	-3.74 (-1.64)	-3.88* (-1.73)
<i>CR</i>	-0.02 (-0.36)	-----
<i>RR</i>	-0.05* (-1.73)	-0.05* (-1.75)
<i>DE</i>	-0.41 (-1.37)	-0.38 (-1.34)
$\text{Log}_n S$	0.43* (1.97)	0.44* (1.95)
$\Delta K/K$	—	—
<i>E</i>	-0.09 (-0.10)	-0.10 (-0.12)
-2 log likelihood ratio	49.09**	49.08**

* Statistically significant at the 90 percent level of confidence (a two-tailed test), at 30 degrees of freedom. The maximum likelihood estimation procedure is used in estimating the logit equations. The log likelihood is distributed χ^2 with 30 degrees of freedom.

** Statistically significant at 90 percent level of confidence (a two-tailed test).

1 Based on information provided by 37 firms in the telecommunications, informatics, electronics, computers, chemicals, pharmaceuticals, and biotechnology industries. The data are derived from Compact D CD- ROM. The SPSS software is used for logit estimation.

Table 3
Logit Analysis of the Determinants of Alliance Participation,
Traditional Industrial Sector, Canada¹
 (Coefficients with *t*-statistics in parentheses)

Independent variable	Estimated logit Model 3	Estimated logit Model 4
Constant	-7.39 (-1.61)	-1.16 (-0.53)
<i>CR</i>	2.38* (1.75)	1.76 (1.02)
<i>RR</i>	0.05 (0.501)	—
<i>DE</i>	2.69 (1.36)	2.32* (1.71)
$\text{Log}_n S$	0.48 (1.53)	—
$\Delta K/K$	-2.55* (-1.75)	-2.23* (-1.72)
<i>E</i>	-4.38* (-1.89)	-2.88* (-1.95)
-2 log likelihood ratio	21.48	24.46

* Statistically significant at the 90 percent level of confidence (a two-tailed test), at 33 degrees of freedom. The log likelihood is distributed χ^2 with 33 degrees of freedom. The maximum likelihood estimation procedure is used in estimating the logit equations.

** Statistically significant at 90 percent level of confidence (a two-tailed test).

1 Based on information provided by 40 firms in the following industries: mining; forest products; automotive and transportation; power, oil, and gas; food and beverages; and services. The data are derived from Compact D CD-ROM. The SPSS software is used for logit estimation.

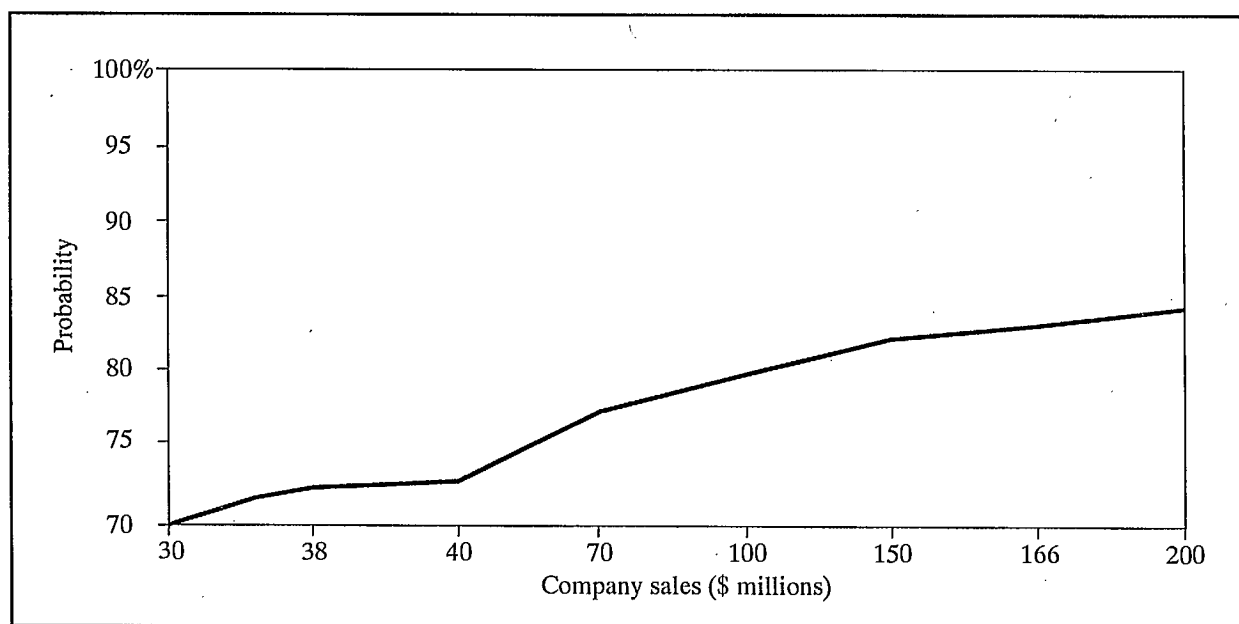
In the knowledge-based sector, the two significant factors that determine alliance participation are firm size and the rate of return. As firm size increases, the participation in alliances also increases. The larger firms are likely to have better-established marketing and R&D infrastructure and more physical and financial resources. Thus they are often considered better partners in alliance formation. On the other hand, the rate of return has a negative effect on alliance participation. As the rate of return declines, the participation rate in interfirm cooperation increases. Low rates of return would stimulate firms to seek growth opportunities externally,

through strategic alliances, mergers, or direct foreign investments abroad. Firms often prefer the first growth strategy because it is less costly to pursue and it is more flexible.

The estimated equations can be used to calculate the average probability of participating in alliances and the changes in participation probabilities when the values of sales increase or when the rates of return vary. By using the coefficients of Model 2 and the mean values of the significant variables, it was determined that the average probability of participating in strategic alliances for Canadian firms in the knowledge-based sector is 72 percent. Figure 3 displays the changes in participation probabilities as sales increase. For a company with sales of \$30 million, the participation probability is low, around 70 percent. On the other hand, for a firm with sales of \$200 million, the probability of participating in strategic alliances is very high, about 84 percent.

In the traditional industrial sector (Model 4, Table 3), the three key determinants of alliance engagement include the debt/equity ratio, capital growth, and exports. Rapid growth of capital investments implies that the firm is expanding internally, without relying on the external source of strategic alliances. Accordingly, when the firm's capital growth accelerates, its participation in alliances declines. Similarly, exporting firms do not need alliances to gain access to new markets or to jump market barriers in emerging markets and regional trading blocks. They use their export strategy as an alternative to the alliance strategy. As a consequence, exports have a negative influence on the probability of participating in strategic alliances.

Figure 3
Probability of Participating in Strategic Alliances,
by Sales, Knowledge-Based Sector, Canada, 1995¹

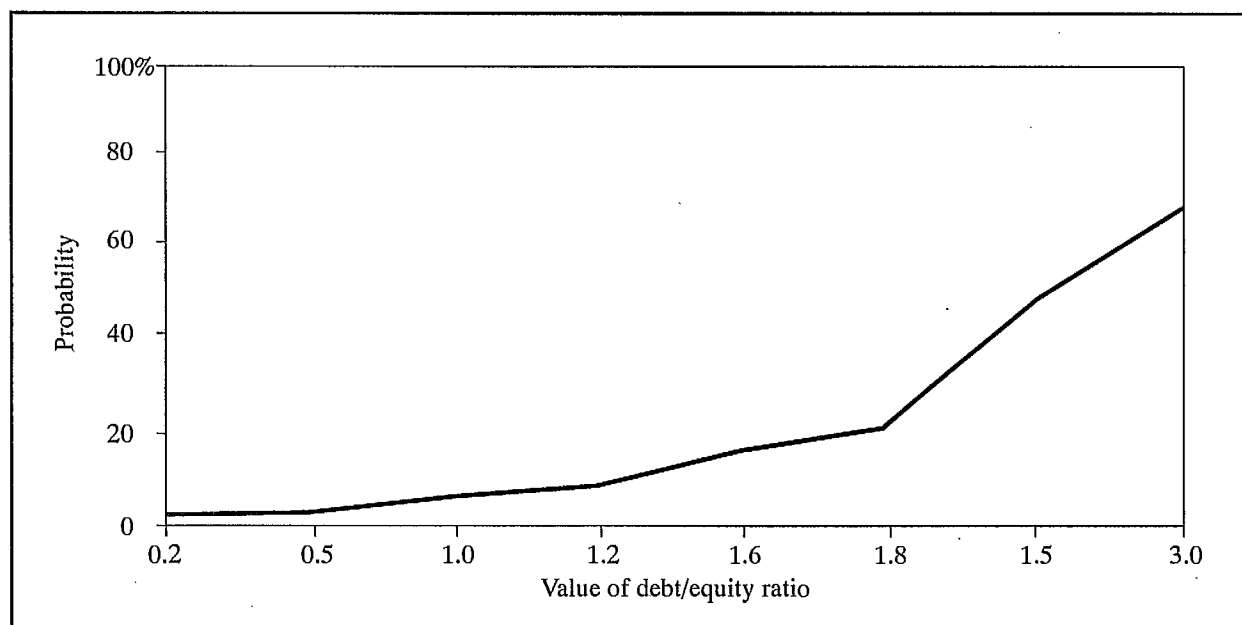


¹ Based on the coefficients of Model 2. The data were derived from the sample survey of Canadian companies and from Compact D CD-ROM.

The traditional sector includes a number of firms that are involved in mining and oil exploration. These firms often need large commitments of funds in the initial stages. With rising debt/equity ratios, they will enter into strategic partnerships in order to leverage their resources. Thus the debt/equity variable has a positive influence on the alliance participation probability. This result is consistent with the prediction of organization theory, as described above, which states that firms often participate in interfirm alliances in order to obtain resources from other firms.

The estimated equations for the traditional sector can be used to determine the average probability of participating in interfirm partnerships and the changes in participation probabilities when the rate of capital growth increases or when debt/equity ratios vary. By using the coefficients of Model 4 and the mean values of the significant variables, it is estimated that the average probability of participating in strategic alliances for Canadian firms in the traditional sector is 16 percent. This probability is substantially lower than that for firms in the knowledge-based sector. These results clearly show that the incidence of interfirm alliances predominates among the firms in the knowledge-based sector. Moreover, Figure 4 displays the changes in participation probabilities as debt/equity ratios increase. For a company whose debt/equity ratio is 1, the participation probability is very low, around 7 percent. On the other hand, for a firm whose debt/equity ratio is 3, the probability of participating in strategic alliances rises to 69 percent.

Figure 4
Probability of Participating in Strategic Alliances,
by Debt/Equity Ratio, Traditional Sector, Canada, 1995¹



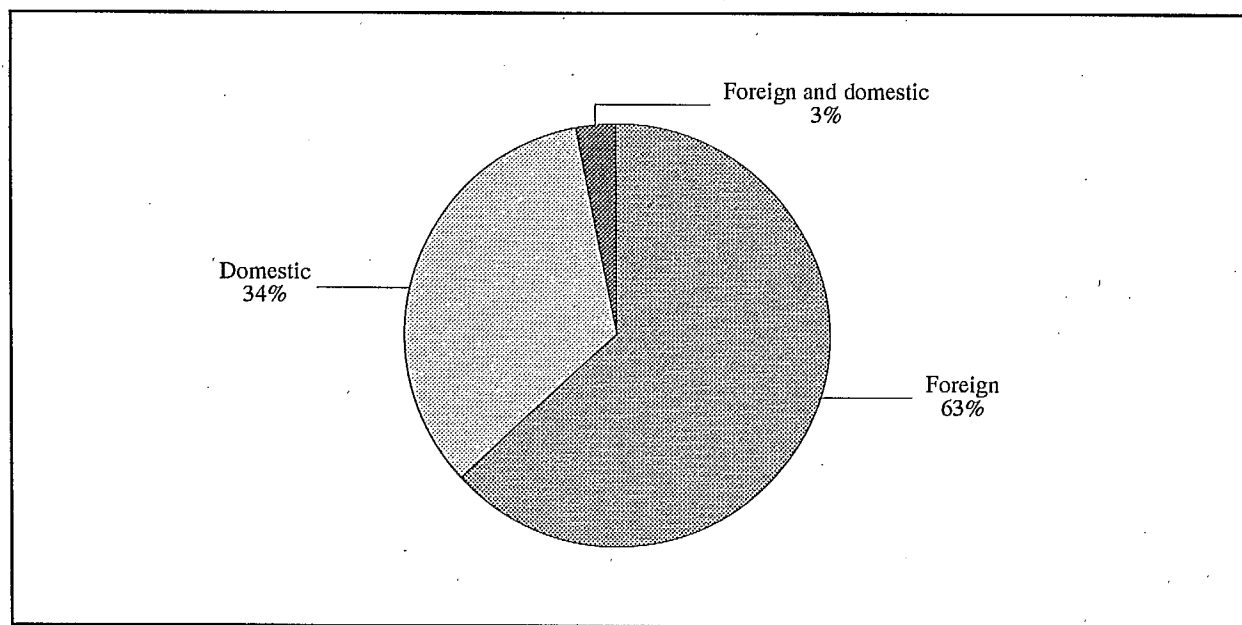
1 Based on the coefficients of Model 4. The data were derived from the sample survey of Canadian companies and from Compact D CD-ROM.

Profile of Strategic Alliances in Canada

Canadian companies often participate concurrently in several interfirm alliances; the median number strategic partnerships per firm is four. However, one in seven firms has a multitude of alliances, ranging from 50 to 140. About two thirds of strategic alliances are with foreign companies (Figure 5). There is a distinct pattern of industry concentration in this distribution of alliances classified by foreign and domestic companies. While alliances exclusively with foreign firms are relatively more concentrated in telecommunications; informatics, electronics and computers; and transportation, interfirm alliances exclusively with domestic companies are concentrated in services; oil, gas, and power; and forest products. In the survey, only one company, in the paper and forest products industry, belonged to alliances with mixed (foreign and Canadian) members. In addition, the number of alliances with foreign firms is relatively greater among larger companies. For example, over one third of interfirm partnerships with foreign companies are found among Canadian companies with annual sales of over \$2 billion, as compared to about one seventh of alliances with domestic firms. On the other hand, over 22 percent of alliances with domestic firms are observed among companies with annual sales of \$140 million or less, as compared to about 7 percent for alliances with foreign firms (Table 4).

Canadian companies take part in several types of strategic partnerships. The most important include joint ventures, research consortia, and co-marketing. Joint ventures predominate with 27 percent of the total alliances, followed by R&D consortia with 15 percent,

Figure 5
Foreign and Domestic Strategic Alliances



Source: Sample survey of Canadian companies, 1995.

Table 4
Foreign, Domestic and All Strategic Alliances
by Size of Company Sales, Canada, 1995

Company annual sales	Alliances with foreign companies	Alliances with domestic companies	All alliances
(Millions of \$)		(Percent)	
\$1-\$140	7.3	22.5	12.2
\$140-\$500	44.1	35.6	41.3
\$500-\$1,000	3.5	7.6	4.8
\$1,000-\$2,000	8.9	19.6	12.4
\$2,000 and over	36.2	14.7	29.2
Total	100.0	100.0	100.0

Source: Sample survey of Canadian companies, 1995.

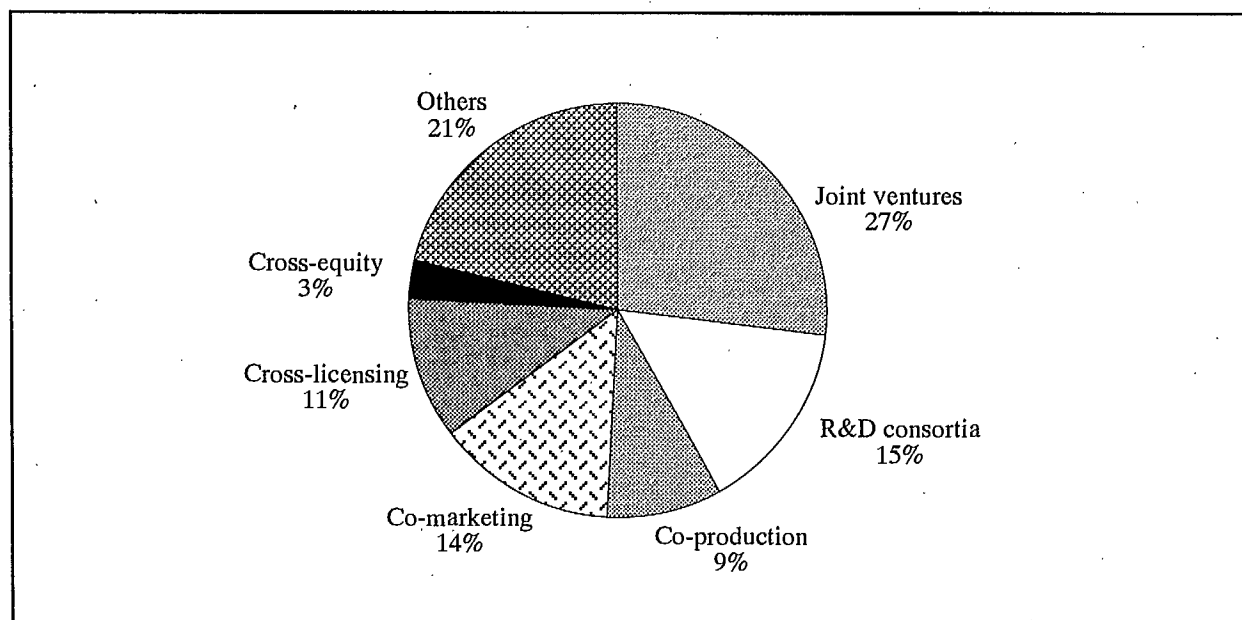
and co-marketing with 14 (Figure 6). Cross-equity alliances are not a popular form of partnership in Canada.

In analyzing the distribution of alliance types by industry, a distinct concentration pattern can be observed. For instance, joint ventures are mostly found among firms in mining, in construction, and in oil, gas, and power, whereas research consortia are mostly seen in informatics, electronics, and computers (Table 5). Almost three quarters of R&D consortia are observed among companies in this group. Most co-marketing and cross-licensing alliances are also found in this group, as well as in telecommunications. It is somewhat surprising that companies in chemicals, pharmaceuticals, and biotechnology do not engage in research consortia in Canada: they participate more in the co-production type of interfirm partnership. Firms in forest products are also absent from R&D consortia, but they do engage in cross-equity alliances.

Among all strategic partnerships in Canada, vertical alliances with distributors preponderate. These are observed mainly in informatics, electronics, and computers, and in telecommunications: four fifths of alliances with distributors are found in those two industries (Table 6), which specialize in niche products and sell them through a worldwide network of distribution alliances. For instance, Corel, a leading Canadian software company, has a network of 100 distributors in 60 countries.

From the viewpoint of competition policy, horizontal alliances with competitors are critical because of their potential for anti-competitive practices. One in five strategic partnerships are with competitors in Canada (Figure 7). Horizontal alliances are mostly found in such resource-based industries as mining and processing, and oil, gas, and power. They are less

Figure 6
Distribution of Strategic Alliances by Type



Source: Sample survey of Canadian companies, 1995.

Table 5
Forms of Strategic Alliances by Industry, Canada, 1995

Industry	Joint ventures	Research consortia	Co-production	Co-marketing	Cross-licensing	Cross-equity	Others
(Percent)							
Informatics, electronics, and computers	4.8	74.2	10.3	33.3	47.0	0.0	2.0
Telecommunications	16.8	16.9	47.7	31.6	31.8	27.5	14.6
Transportation	3.6	9.0	6.5	4.0	1.5	5.0	1.6
Chemicals, pharmaceuticals, and biotechnology	4.2	0.0	15.0	1.1	0.0	0.0	1.6
Mining and construction	26.0	0.0	10.3	1.1	0.0	2.5	0.0
Power, oil, and gas	22.5	0.0	3.7	18.1	18.9	5.0	0.0
Food and beverages	3.0	0.0	0.0	0.6	0.8	7.5	2.8
Forest products	4.2	0.0	4.7	5.6	0.0	25.0	2.8
Services	14.7	0.0	0.0	4.5	0.0	27.5	74.5
Others	0.3	0.0	1.9	0.0	0.0	0.0	0.0

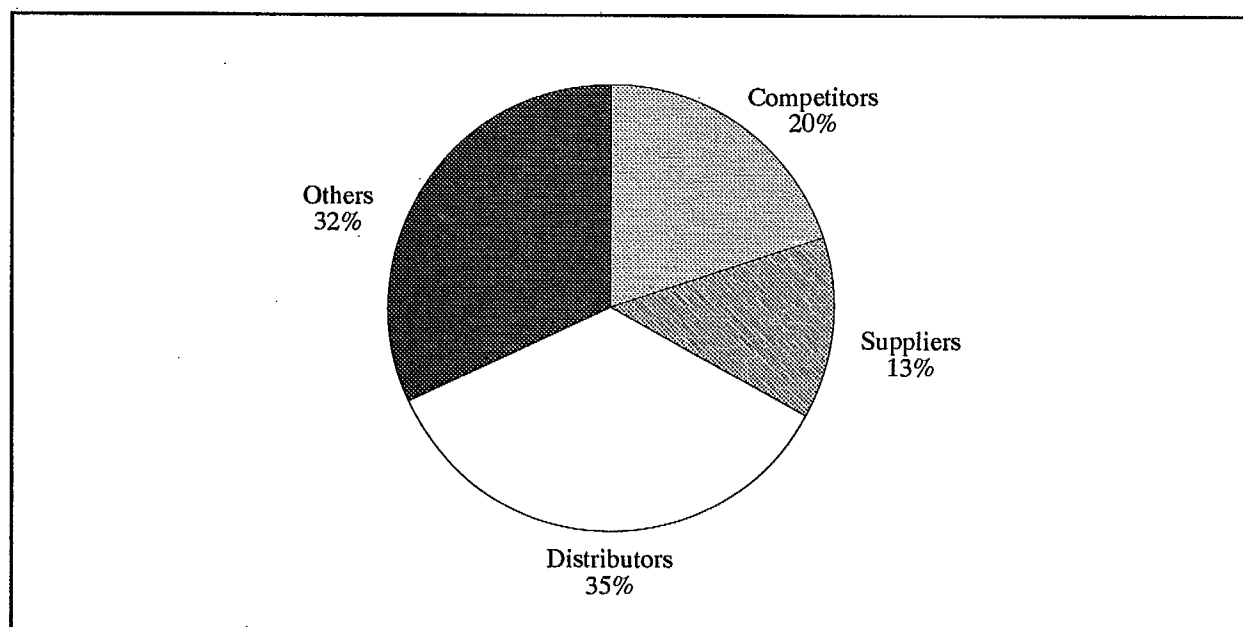
Source: Sample survey of Canadian companies, 1995.

Table 6
Strategic Alliances with Competitors, Suppliers, and Distributors, Canada, 1995

Industry	Alliances with competitors	Alliances with suppliers	Alliances with distributors	Alliances with others
Informatics, electronics, and computers	2.6	5.1	48.9	3.0
Telecommunications	8.4	27.4	30.4	29.3
Transportation	2.1	17.1	1.8	0.7
Chemicals, pharmaceuticals, and biotechnology	5.8	6.8	7.0	0.0
Mining and construction	43.2	2.6	1.5	0.0
Power, oil, and gas	17.4	3.4	0.6	30.0
Food and beverages	3.7	5.1	1.8	0.7
Forest products	8.9	12.0	4.0	36.0
Services	7.9	20.5	2.4	0.3
Others	0.0	0.0	1.5	0.0
All industries	100.0	100.0	100.0	100.0

Source: Sample survey of Canadian companies, 1995.

Figure 7
Strategic Alliances with Competitors, Suppliers and Distributors, Canada, 1995



Source: Sample survey of Canadian companies, 1995.

popular among such emerging industries as informatics, electronics and computers, and telecommunications.

About 13 percent of alliances are with suppliers. They are mostly observed in the telecommunications, services, and auto and transport industries, which require very precise, specialized parts to manufacture their products. These industries rely on out-sourcing through a network of strategic alliances with their suppliers. Canadian companies also participate in a large number of alliances that do not involve distributors, suppliers, or competitors: almost one third of partnerships focus on precompetitive, applied R&D activities and involve other companies as well as universities and research institutions. The importance of these "other" alliances is increasing rapidly because of the generic nature of new technologies. The technologies developed and perfected by these alliances can be used in a large number of (sometimes unrelated) industries. This type of interfirm alliance is prevalent in forest products, in oil, gas, and power, and in telecommunications. The firms involved often develop their new products or production processes through collaboration with research institutions.

As indicated above, Canadian firms follow several strategic approaches to build their global capabilities. They include strategic partnerships, acquisitions and mergers, export distribution networks, and start-ups (foreign direct investments). In our survey of Canadian companies, several firms have indicated that, in practice, they use all four approaches. Which approach is preferable in a given situation depends on the global market opportunities associated with each approach.

The sample Canadian firms were also asked to show the relative importance of various strategic approaches by ranking their contribution to creating or enhancing international competitive advantage (Table 7). Two thirds of respondents clearly believe that strategic alliances are the most important approach in this regard. This perception is based upon the firm's belief that it needs a foreign ally with a view to protecting its intellectual property and to providing data about local customs, laws and regulations, and market conditions and trends. Because of these advantages of strategic alliances, there seems to be a consensus among Canadian firms that they will play an increasingly greater role in the future. On the other hand, respondents consider that start-ups through foreign direct investment are the least preferable option to create global market capabilities. Many companies believe that such a strategy involves greater risks.

Performance of Strategic Alliances in Canada

In our survey of Canadian companies, sampled firms were asked to identify and rank the specific effects of strategic partnerships on their competitive advantage (Table 8). The most important impacts include: improving the company's market and resource access; enhancing strategic growth by building world-class capabilities; and building financial strength by producing more incomes and lowering risks. The least important effects are related to increasing exports, increasing internal and external investments, and building the company's knowledge and skills by reducing the learning curve at all stages in the production process. These results are indeed

Table 7
Relative Importance of Strategic Approaches by Canadian Companies to
Build Global Market Capabilities
 (Percentage of all respondents)

Strategic approaches	Least important	Important	Most important
Strategic alliances	8	26	66
Mergers and acquisitions	27	22	51
Exports through own distribution networks	47	18	35
Start-ups (foreign direct investments)	58	16	26

Source: Sample survey of Canadian companies, 1995.

Table 8
Relative Importance of the Effects of Strategic Approaches on
the Company's Advantage
 (Percentage of all respondents)

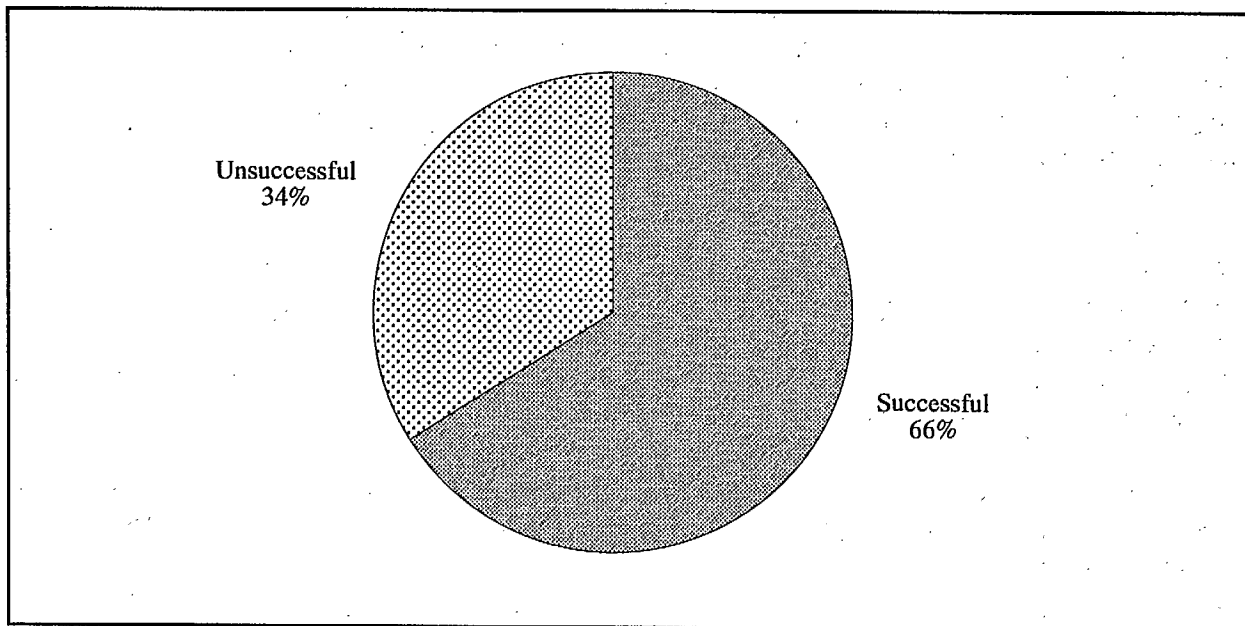
Effects	Least important	Important	Most important
Improve market and resource access	14	18	68
Enhance strategic growth through building world-class capabilities	17	16	67
Build financial strength by lowering risks	13	23	64
Enhance ability to respond rapidly to changing market conditions	22	25	58
Improve core technological strength	27	26	47
Build knowledge and skills by reducing learning curve	40	22	38
Increase investments	25	37	38
Increase exports	47	20	33

Source: Sample survey of Canadian companies, 1995.

surprising: one would have expected those least important effects to be ranked higher by Canadian firms.

The survey also enquired whether alliances were successful or not. Of all the alliances in which Canadian firms have been involved since 1980, two thirds were reported to have been successful (Figure 8). Companies gave several reasons for the success of their alliances (Table 9).

Figure 8
Percentage Distribution of Successful and Unsuccessful Strategic Alliances Since 1980



Source: Sample survey of Canadian companies, 1995.

Table 9
Relative Importance of Reasons for the Success of
Some Strategic Alliances
 (Percentage of all respondents)

Reasons	Least important	Important	Most important
Effective support from senior management	1	8	91
Clear sense of mission and objectives	3	8	89
Strong leadership team with personal commitment	0	11	89
Sense of teamwork, purpose, and trust	3	12	85
Right commitment of resources and capabilities	4	23	73
Clear milestones and performance measures	5	22	73
Incentives to share knowledge and skills	9	36	55
Shared values and cultures among partners	20	31	49

Source: Sample survey of Canadian companies, 1995.

The three key reasons are: 1) effective support from senior management; 2) a clear sense of mission and objectives; and 3) a strong leadership team with personal commitment to the alliance's success. Teamwork, purpose, and trust among participants at all levels also ranked high. Canadian companies gave the lowest rating to such reasons as shared values and cultures among alliance partners, and incentives to share knowledge and skills. Again, these results are surprising, given the fact that the two lowest-ranked reasons are often cited as crucial factors in the economics literature.

Respondents were also asked to identify the reasons for alliance failures and to rank these reasons by importance (Table 10). Some of the key reasons include a weak leadership team without strong commitment, false expectations about partners' capabilities, and weak support from senior management. On the other hand, such factors as ambiguous alliance mission statement, partners' values and cultures that do not match, and weak performance and review mechanism are considered as the least important reasons for the failure of alliances.

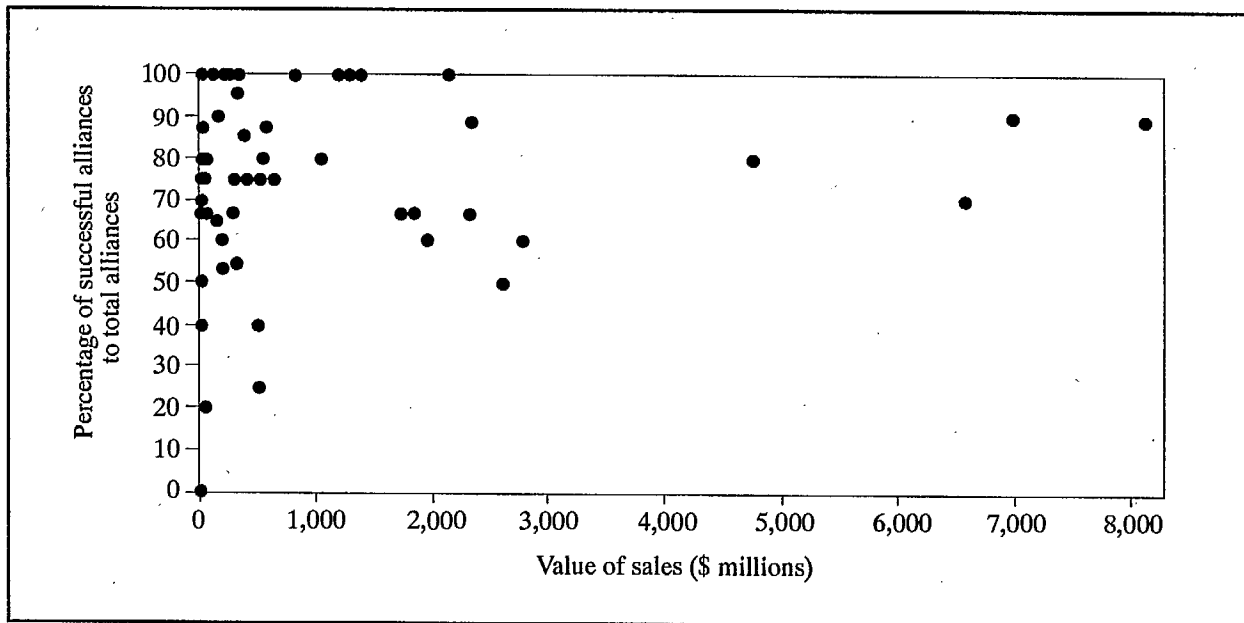
Two more questions are also examined in this study. First, is the successful-alliance ratio (the ratio of successful alliances to the total number of alliances) influenced by the firm's size? In particular, does the successful-alliance ratio decline as the firm's size increases? Second, is there any relationship between the successful-alliance ratio and the number of alliances the firm has been involved in since 1980? The answers to both questions are negative. In Figures 9 and 10,

Table 10
Relative Importance of Reasons for the Failure of Some Strategic Alliances
(Percentage of all respondents)

Reasons	Least important	Important	Most important
Weak leadership team without strong commitment	12	15	73
False expectations about partners' capabilities	9	19	72
Weak support from senior management	15	14	71
Poor lines of communication between partners	9	24	67
Changes in partners' strategic objectives and focus	11	31	58
Inadequate or poor calibre of resources committed	18	23	58
Benefits and costs not balanced	16	31	55
Ambiguous alliance mission statement	25	24	51
Mismatch between partners' values and cultures	24	27	49
Weak performance and review mechanism	22	32	46

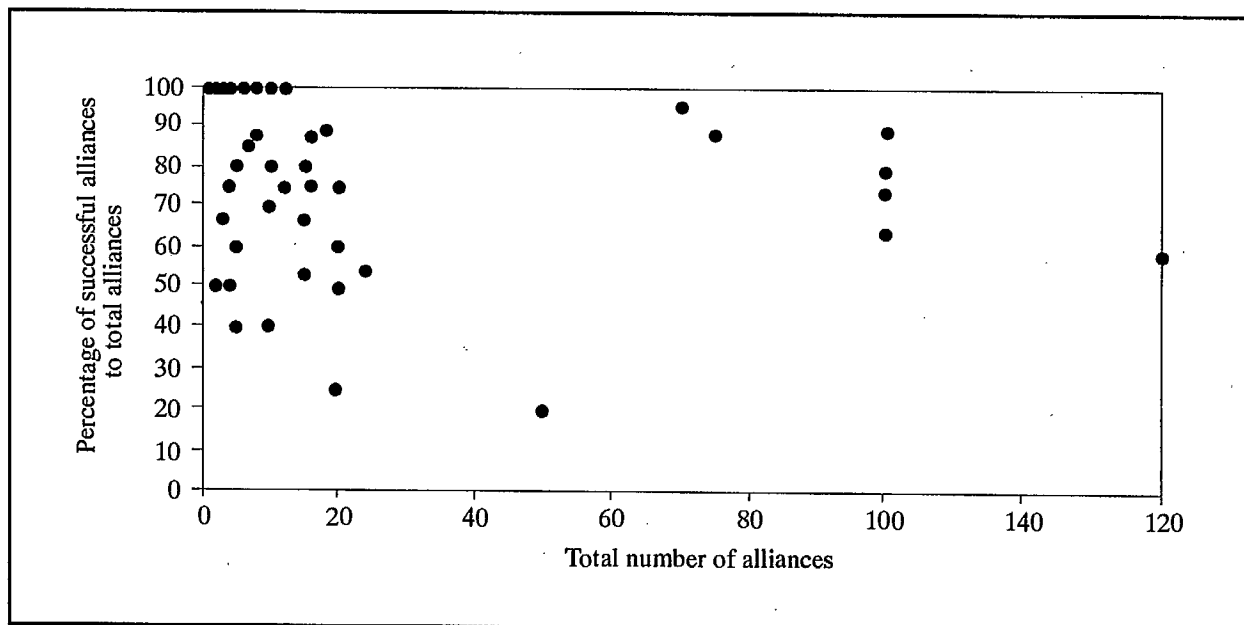
Source: Sample survey of Canadian companies, 1995.

Figure 9
Successful Alliance Ratios, by Company Sales, Canada, 1995



Source: Sample survey of Canadian companies, 1995.

Figure 10
Successful Alliance Ratios, by Number of Alliances, Canada, 1995



Source: Sample survey of Canadian companies, 1995.

successful alliance ratios are displayed according to firm sales and the number of alliances entered into. Each dot in the scatter diagrams refers to a single firm. It is obvious from both scatter diagrams that, in general, the successful-alliance ratio does not increase as the firm's level of sales rises nor is there any positive relationship between successful ratios and the number of alliances.

5. CONCLUDING REMARKS AND POLICY IMPLICATIONS

Participants in the survey were questioned about their view of the role of government in promoting strategic alliances in Canada. Three questions dealt specifically with that topic:

- Should government encourage the formation of alliances because they promote Canada's international competitiveness?
- Should government discourage the formation of alliances because they reduce competition in the marketplace?
- Assuming that government has some positive role to play, how should it encourage the formation of strategic alliances in Canada?

Almost all respondents believe that government can promote Canada's international competitiveness by encouraging strategic partnerships. However, that intervention should be indirect, providing only a supporting role. Several firms see a dual role for government. First, it can play a brokerage role by connecting potential partners. And second, it can provide, through its trade offices, background data about potential foreign partners. At present, both roles have not been clearly articulated in the form of specific programs. For example, many companies believe that the phenomenon of alliances is so new and has been expanding so fast that trade commissioners in foreign countries do not have the necessary expertise to support Canadian companies that seek foreign partners. This problem is more serious in emerging high-technology sectors.

The truth is, however, that some Canadian trade commissions abroad have implemented proactive programs aimed at promoting interfirm alliances between Canadian and foreign firms. For example, the Canadian consulate general in Detroit has established a Strategic Alliance Centre, whose sole function is to help companies in the U.S. Midwest companies to link up with Canadian firms "in corporate alliances designed to expand markets, product lines and profits." The Strategic Alliance Centre distributes a questionnaire online to prospective U.S. partners and collects data about their company profiles. Then the Centre "provides a matching service for U.S. and Canadian businesses seeking cross-border strategic alliances in both the manufacturing and service sectors." The matching service links the U.S. company's profile with that of the Canadian firm and helps to establish contact between the two prospective partners. This matching service is a novel idea, and it should also be established in other foreign markets.

All Canadian firms believe strongly that modern alliances differ from what used to be called "coalitions" and that they do not create anti-competitive effects. Modern strategic alliances emphasize flexibility, the ability to generate innovation-led growth, and group synergy.

They enable firms to combat intense international competition resulting from the globalization of the world economy and from rapid technological advances.

Several companies made suggestions about how government could promote strategic alliances in Canada. These policy suggestions are described in the box.

**Policy Suggestions Made by Survey Participants to
Promote Strategic Alliances in Canada, 1995**

- Provide special incentives to those alliances that focus on R&D or on developing new markets.
- R&D tax credit should be given only to those companies that participate in R&D consortia.
- Legal costs for forming strategic partnerships in Canada are very high. Reduce these costs by cutting regulations and red tape if the government wants to encourage the growth of alliances in the country.
- Although the present competition policy is less concerned about the anti-competitive effects of R&D consortia, it is more restrictive towards those alliances whose members are only Canadian companies. Our competition policy is biased against domestic companies' strategic alliances. This is the reason why Canadian companies have many more alliances with foreign companies than with domestic companies.
- In several emerging markets in the world economy, intellectual property rights and foreign direct investments are inadequately protected. It discourages Canadian firms, especially in our high-tech sector, to enter into strategic alliances with the companies located in those markets. Strong bilateral or multilateral treaties with the objective of protecting intellectual property rights and foreign investments will certainly encourage our companies to involve more in strategic partnerships with foreign partners.
- Provide more information about market access in various world markets. It will promote not only Canada's international trade, but also strategic partnerships between Canadian and foreign companies.
- Canada should send more trade commissions, led by our Prime Minister or by a senior cabinet minister, to other major world markets. These commissions, similar to those sent earlier to China and India, will encourage strategic alliances by promoting new contacts between Canadian and foreign companies.

The growth of strategic alliances with foreign companies raises a number of difficult, troubling problems for governments about such issues as national sovereignty, national defence, and the control of the national economy. What is the nationality of cross-border alliances? Who owns the products and process technologies developed by cross-border R&D consortia? In the national-defence area, most governments seek to control strategic industries such as computers or telecommunications, but cross-border alliances in these industries, which are rapidly growing, have eroded that control. These are difficult issues; it will take some time to solve them because they will have to be handled at the multilateral level.

APPENDIX A
COMPANIES TAKING PART IN THE SURVEY

Company name	Location
Allelix Biopharmaceuticals Inc.	Mississauga
Antares Mining and Exploration	Toronto
Asia Minerals	Vancouver
Audrey Resources	Montreal
Avenor Inc.	Montreal
Banque Nationale de Paris	Montreal
Biomira	Edmonton
Bombardier	Montreal
Bracknell Corporation	Toronto
Brenda Mines	Toronto
Caldwell Partners	Toronto
Cambridge Shopping Centres Ltd.	Toronto
Camdev	Toronto
Canadian Imperial Bank of Commerce	Toronto
Canadian Pacific Ltd.	Montreal
Celltech Media	Mississauga
Canadian Marconi	Saint Laurent (Que.)
Cogenix Power Corp.	Vancouver
Consolidated Abitibi Ltd.	Toronto
COREL	Ottawa
Derlan Industries Ltd.	Toronto
Discovery West Corp.	Toronto
Dominion Textile	Montreal
DOMTAR	Montreal
Even Resources	Vancouver
Faraday Resources	Toronto
First Marathon Inc.	Toronto
Four Seasons Hotels Inc.	Toronto
Gendis Inc.	Winnipeg
Geriatrux Pharmaceuticals	Vancouver
Goldmark (United Coops of Ontario)	Calgary
Great Lakes Power Inc.	Toronto
Green Forest Lumber	Toronto
Hydro-Québec	Montreal
INCO	Toronto
INMET (formerly Metal Mining Corp.)	Toronto

Company name	Location
International Aqua Foods	Vancouver
International Verifact Inc.	Toronto
Jannock Ltd.	Toronto
John Labatt Ltd.	Toronto
Keltic Inc.	Halifax
King Products Inc.	Toronto
Koala Beverages	Vancouver
Maclean Hunter	Toronto
Magna International Inc.	Markham
Marathon Realty Co. Ltd.	Toronto
Markborough Properties	Toronto
Methanex Corp.	Vancouver
Métro-Richelieu	Montreal
Midland Walwyn	Toronto
MITEL	Kanata
MOORE Corp.	Toronto
National Sea Products	Halifax
New Brunswick Housing Corp.	Fredericton
Newbridge	Kanata
Norcen Energy Resources Ltd	Calgary
NORTEL	Mississauga
Northwest Drug Co.	Edmonton
Nova Scotia Resources	Halifax
Power Corporation	Montreal
PPG Canada	Toronto
Q Sound Laboratories	Calgary
Quorum Growth	Toronto
Radio-Mutuel	Montreal
REPAP Enterprises Inc.	Montreal
Saskatchewan Telephones	Regina
Synex International	Vancouver
Tele Pacific International Communication	Vancouver
TELESAT Canada	Gloucester
Telus Corporation	Edmonton
Toronto Sun	Toronto
Unigesco Inc.	Montreal
United Grain Growers	Winnipeg
Vidatron Group Inc	Vancouver
Videotron Communication Ltd.	Edmonton

**APPENDIX B
QUESTIONNAIRE**

SURVEY OF STRATEGIC ALLIANCES AMONG CANADIAN COMPANIES

CONFIDENTIAL

(The information provided in this survey will be treated with confidentiality. It will be only used for broad economic analysis)

Applied International Economics, OTTAWA, Canada
TEL: 613-224-7186
FAX: 613-224-1667

IDENTIFICATION

Respondent: _____

Title: _____

Company Name: _____

Address: _____

Telephone/Fax: _____

I COMPANY PROFILE

Q1: What are the major products and/or services of your company?

Q2: What was your company's total global sales in 1993?

(Please circle the appropriate level)

Less than \$1 million

\$1 – 10 million

\$11 – 50 million

\$51 – 100 million

greater than \$100 million

Q3: What proportion of your sales was in foreign markets in 1993?

Q4: (a) Is your company controlled by a parent company?

Yes (go to 4b)

No (go to Q5)

(b) Please indicate the location of your parent company (circle the appropriate location)

Canada

USA

UK

Japan

Germany

France

Other

Q5: How many strategic alliances has your company been involved since 1980?

_____ (number)

Q6: How many strategic alliances has your company been involved *exclusively* with foreign companies since 1980? _____ (number)

Q7: How many strategic alliances has your company been involved *exclusively* with domestic companies? _____ (number)

Q8: Of the total alliances involved since 1980, how many are *still* active in 1995?

_____ (number)

II OBJECTIVES AND PROFILE OF STRATEGIC ALLIANCES

Q9: What are the principal objectives of all the alliances that your company has been involved since 1980? (Please circle appropriate objective)

To gain access to new markets in order to build global market capabilities

To jump market barriers in emerging markets and regional trading blocks

To gain access to new technologies

To reduce R&D risks or to cope with escalating technology and R&D costs

To reduce financial risks

To speed new market development

To speed new production process development

To integrate markets and technology

To attain cost competitiveness

To block competitors' moves

Other reasons (please describe)

Q10: Can you classify the forms of all the strategic alliances that your company has been involved since 1980?

Form

Number

Joint venture

Research consortia

Co-production partnership

Co-marketing partnership

Cross-licensing arrangement

Cross-equity investment arrangement

Other form (please describe)

Q11: Of the total strategic alliances since 1980, how many alliances are with your competitors or with your suppliers or with your clients (or with your distributors)?

With your competitors _____ (number)

With your suppliers _____ (number)

With your clients (distributors) _____ (number)

With other companies (please describe) _____ (number)

III ALLIANCE ROLE AND PERFORMANCE

Q12: What strategic approaches would your company adopt to build global market capabilities? (Please circle the appropriate number. On a scale of 1 to 5, 1 is not important whereas 5 is very important)

	not important			very important	
Strategic alliances	1	2	3	4	5
Acquisitions/Mergers	1	2	3	4	5
Exports through establishing distribution network	1	2	3	4	5
Start-ups (foreign direct investment)	1	2	3	4	5
Others (please specify)	1	2	3	4	5

Q13: What are your expectations about the future role of strategic alliance?

Increase
Remain same
Decrease

Q14: How would you rate the following effects of alliances on your company's competitive advantage? (Please circle the appropriate number. On a scale of 1 to 5, 1 is not important whereas 5 is very important)

	not important			very important	
Improve company's core technical strength	1	2	3	4	5
Improve company's market and resource access	1	2	3	4	5
Build company's knowledge and skills by reducing the learning curve at all stages in the production process	1	2	3	4	5
Increase exports	1	2	3	4	5
Increase company's internal and external investment	1	2	3	4	5
Enhance strategic growth through building world class capabilities and building global market capabilities	1	2	3	4	5
Build financial strength by producing more income and by lowering risks	1	2	3	4	5

Enhance ability to respond rapidly to changing market conditions	1	2	3	4	5
Others (please specify)	1	2	3	4	5

Q15: Of all the alliances your company has been involved since 1980, how many do you consider successful or failure?

Successful _____ (number)
Failure _____ (number)

Q16: How would you rate the following reasons why some of your alliances are successful?
(Please circle the appropriate number. On a scale of 1 to 5, 1 is not important whereas 5 is very important)

	not important			very important	
A clear sense of an alliance's mission and objectives	1	2	3	4	5
Incentive to share and build knowledge and skills among participants	1	2	3	4	5
Shared values and cultures among alliance partners	1	2	3	4	5
The right commitment of basic resources and capabilities to the alliance	1	2	3	4	5
A sense of teamwork, purpose and trust among participants at all levels	1	2	3	4	5
A strong leadership team with personal commitment to the alliance's success	1	2	3	4	5
Effective support from senior management	1	2	3	4	5
Clear milestones and performance measures	1	2	3	4	5
Others (please specify)	1	2	3	4	5

Q17: How would you rate the following reasons why some of your alliances are failure? (Please circle the appropriate number. On a scale of 1 to 5, 1 is not important whereas 5 is very important)

	not important		very important		
Ambiguous alliance mission statement	1	2	3	4	5
Partner's values, cultures and capabilities do not match	1	2	3	4	5
False expectations about partner's capabilities	1	2	3	4	5
Changes in partner's strategic objectives and focus	1	2	3	4	5
Inadequate or poor calibre resources committed to the alliance	1	2	3	4	5
A weak leadership team without strong commitment to the alliance's success	1	2	3	4	5
Poor lines of communication between alliance partners	1	2	3	4	5
Benefits and costs of the alliance are not well balanced	1	2	3	4	5
Weak performance review mechanism	1	2	3	4	5
Weak support from the senior management	1	2	3	4	5
Others (please specify)	1	2	3	4	5

Q18: Should government encourage the formation of alliances in Canada? (Please circle the appropriate answer)

Yes because alliances promote Canada's international competitiveness (go to Q19)

No because alliances reduce competition at the marketplace

Government should not intervene

Q19: How should government encourage the formation of alliances in Canada? (Please describe)

Thank you very much for your cooperation

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