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OCCASIONAL PAPER

MANAGEMENT SKILLS DEVELOPMENT IN CANADA

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Industry Canada Industrie Canada

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by Keith Newton, Industry Canada

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INTRODUCTION AND OUTLINE

Are the skills of Canadian managers sufficient to meet the challenges of the knowledge-based economy? This is the central issue of this paper. If continuous innovation is the engine of growth, and innovation depends on new ideas and knowledge, then human resources are of paramount importance, and redoubled efforts are required across the entire spectrum of skill development. Decision makers in both the public and private sectors must, therefore, undertake a critical evaluation of the vast array of programs and services for skill acquisition and knowledge creation.

This paper focuses on one part of the spectrum — management education, training and development. It examines the contention that there are worrisome deficiencies in management skills in Canada. After briefly describing the context within which this challenge to competitiveness arises, the question of adequacy is addressed. Evidence that suggests deficiency is presented, and the particular problems of small- and medium-sized enterprises are highlighted. The hypotheses that Canada lacks a training culture and that management development is not an integral part of doing business in Canada, are examined.

Next, the market for management development products and services is examined in greater detail. It points to the variety of requirements for management development services and suggests the need for basic building blocks supplemented by the continuous acquisition of new, often specialized and in some cases rarefied, skills. This leads to two important points.

- There is a clear need for effective and accessible diagnostic tools and services with which to identify areas of deficiency.

- The availability as well as the flexibility and convenience of delivery of a relevant product or service are important.

An examination of the vast array of products, services and suppliers on the supply side suggests that quantity is not the problem: we must look elsewhere to qualitative considerations such as relevance, timeliness, flexibility and cost. It is concluded that the

two sides of this complex market are not being efficiently matched. Here is a classic case of imperfect information.

The following section examines the information question, adducing evidence from a variety of sources. This leads directly to the policy question of how best to address the gap and to consider the role for government and the principles on which such a role should be based. Potential areas for government facilitation are identified and suggestions made for implementation of specific actions. Finally, a concluding section emphasizes the role of partnership arrangements and the need for further, and continuing, research to enrich the information infrastructure required for management skills development.

1. THE CONTEXT

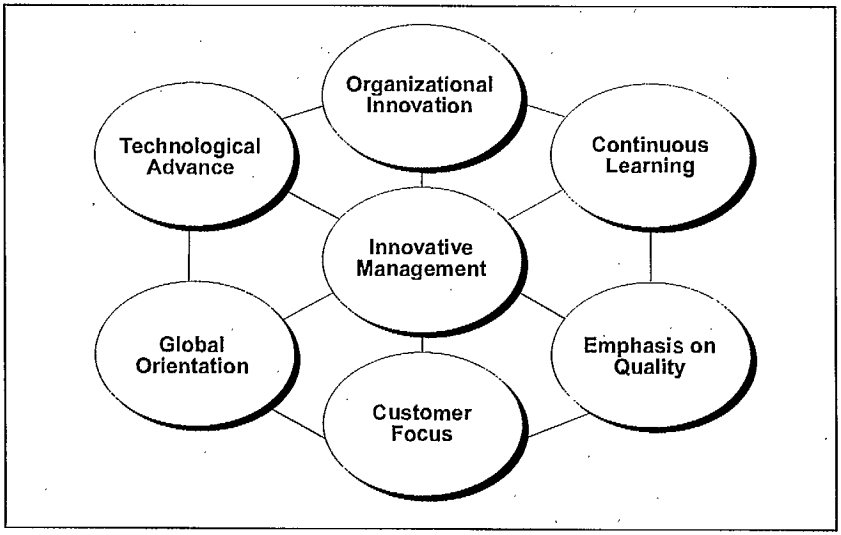
Recent economic performance has been mixed. Inflation is low, but unemployment, despite strong employment gains in 1994, is still high by historical and international standards. The debt and deficit have necessitated strong fiscal action, reflected in deep cuts in public sector spending. International indebtedness continues to be a burden, and productivity performance is still a fundamental concern. To address such issues, concerted action is required by both the private and public sectors not only to establish a stable macro-economic environment but, most important, to enhance the performance of individual firms. The task is not an easy one.

As a new century approaches, Canadian firms face a turbulent global environment characterized by fiercely contested markets, trade liberalization, rapid technological change, rising skill needs and demographic shifts. These profound changes have dramatically altered the business environment and the basis on which firms compete.

- Natural resources are no longer the main source of advantage.
- Low-wage countries have access to standard mass-production technology and successfully compete on the basis of wages and prices.
- Innovations fuelled by knowledge, information and ideas are now the key focus of economic activity.

As a result, firms are under unprecedented pressure to make significant productivity improvements and enhance competitiveness. The new knowledge-based economy challenges firms to compete on their ability to produce higher value-added and differentiated goods and services, and to take these to market faster than other firms. The challenge for managers is that, increasingly, the old approaches to productivity improvements and economic success are proving to be inadequate to deal with the new order. The "new" managers must think globally and benchmark themselves against the global competition. Often, they must introduce far-reaching qualitative changes in key traditional areas (production planning and processes, exporting, financing) to become more responsive to international market requirements. Most important, beating the competition requires that they innovate:

Figure 1
An Innovative Management is at the Heart of the Firm's Competitiveness



- by fully engaging people's intelligence, skills and motivation;
- by driving decision making down to where the job is done;
- by providing people with the technical, organizational and social skills required to carry out that work; and
- by reorganizing work practices to unleash the collective knowledge of employees.

Accordingly, successful organizations are those which have the management skills and leadership to:

- tap and implement the ideas of their people fastest;[1]
- invest in continuous acquisition of knowledge and skills;
- create flexible and high-performance workplaces; and
- ensure that innovations on all fronts (Figure 1) are part of an integrated long-term competitive strategy.

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[1] S. Van Houten, Canadian Chamber of Commerce, "Time to Fully Utilize Canada's Greatest Asset," *Plant,* Canada's Industrial Newspaper, August 1993.

2. THE PROBLEM

Evidence of Deficiency

As the prosperity consultations indicated, and as numerous other pieces of evidence suggest, Canadian managers and entrepreneurs are poorly equipped to deal with globalization and organizational innovation.

- The 1994 World Competitiveness Report ranked Canada 19th out of 41 countries (23 developed and 18 less-developed) on the management factor. Canada got particularly low marks in entrepreneurship, product development, long-term orientation and international experience.

- The 1986 Statistics Canada Census indicated that 45 percent of Canadian business owners have a high school diploma or less.

- According to a Conference Board of Canada study,[2] senior executives of 226 large companies believed that the set of skills and abilities most of their executives possessed, while appropriate to an earlier economic environment, were no longer sufficient to meet the new demands facing the companies, and a profound re-orientation of the role of management was required — away from a predominant concern with controlling to a predominant concern with learning.

- The Industry Canada Business Intelligence project reviewed some 250 surveys and consultations. It found that one of the key business needs, as identified by business itself, was improvement in management practices.

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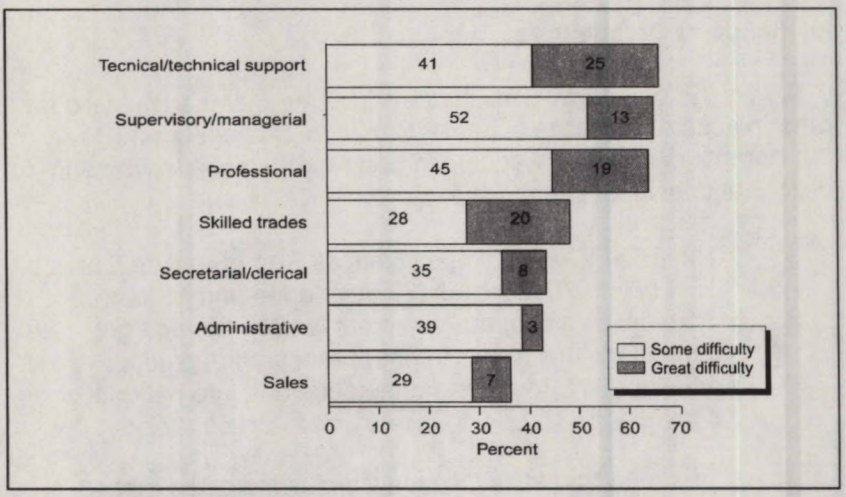
[2] The Conference Board of Canada, *Management and Executive Development in a Changing World*, June 12, 1992.

Figure 2
Percentage of Firms Expecting Difficulty Recruiting in Five Years



Source: Hudson/Towers Institute, *Workforce 2000*, 1991.

- The Hudson Institute[3] indicated in 1991 that 59 percent of firms surveyed reported difficulty recruiting managerial personnel and 65 percent were expecting to have more managerial skill shortages within five years (Figure 2).

According to the International Institute for Innovation,[4] the single biggest cultural barrier to creating learning organizations is the need of many managers to control workers through very narrowly defined job descriptions and by not soliciting or wanting feedback on ways to improve operations.

- The Canadian Manufacturers' Association recognizes that "... in too many cases the process of changing management practices in a way that unlocks the potential of all employees is accomplished only by force — the force

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[3] Hudson Institute Canada, *Workforce 2000, Competing in a Seller's Market: Is Canadian Management Prepared?*, June 1991.

[4] International Institute for Innovation, The Banff Centre for Management, *The Learning Organization: Managing in Turbulent Times*, July 1992.

of major upheavals, relentless competition or technological imperative. This is unnecessary and unproductive."[5]

- An Organization for Economic Co-operation and Development (OECD) study[6] indicated that the principal obstacle to technology diffusion in Canadian firms was the lack of in-house technical and management skills. Other obstacles cited included: foreign ownership, the small size of firms, low domestic research and development (R&D) and skill shortages.

- A National Advisory Board on Science and Technology (NABST) Human Resource Development Committee report[7] stated that the slow rate of technology diffusion, the low level of R&D investment and the hostile financial environment for new technology venture companies stemmed from management and investment decisions, and were testimony to the work needed to change current priorities and perspectives.

- While the Advanced Manufacturing Technology Application Program (AMTAP) was originally focused almost entirely on the advanced manufacturing equipment element, a 1991 review of reports to firms showed that management and human-resource-related issues were found in more than 90 percent of reports (Table 1).

Experience with AMTAP clearly shows that what was designed to address technical problems turned into a multidimensional approach to the firms' problems.

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[5] Canadian Manufacturers' Association, *The Aggressive Economy, Competing to Win*, 1992, pp. 106-107.

[6] Organization for Economic Co-operation and Development, *Science and Technology Policy Outlook*, 1988.

[7] National Advisory Board on Science and Technology, Human Resource Development Committee, 1991.

Table 1
Relative Frequency with which Each Area Is Treated in AMTAP Reports

Area	% of Reports
TECHNOLOGY & CAPITAL ASSET RELATED	94
Shop Technology	65
Floor Layout	65
Material Handling	52
MANAGEMENT RELATED	90
Production Planning & Inventory Control	76
Manufacturing Engineering	48
Design Engineering	22
HUMAN RESOURCE RELATED	95
Quality Issues	74
Organizational Issues	74
Training Issues	30
STRATEGY/MISCELLANEOUS	13

Source: Advanced Manufacturing Technology Application Program (AMTAP), *Evaluation Report*, March 1991.

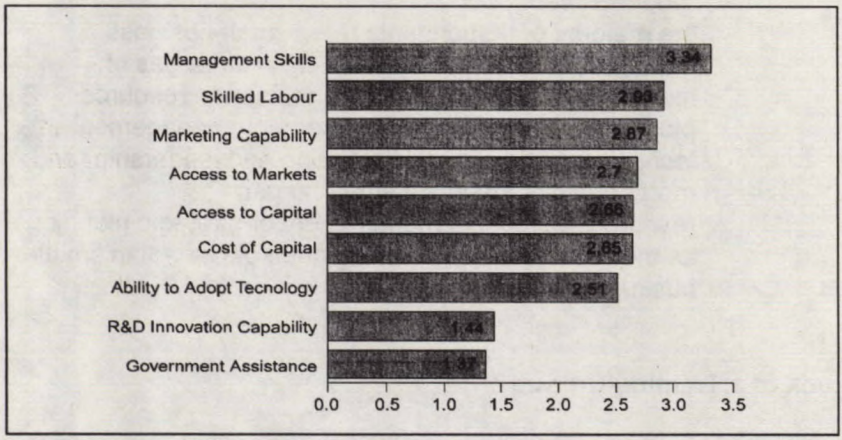
- Canadian managers seem not to be very innovative with respect to human resource management. Recent survey results[8] indicate that only 43 percent of Canadian firms had introduced workplace innovations. Few could be called innovative with respect to human resource management practices: some 70 percent were classified as "traditional."

The Small-Firm Problem

The 900 000 small- and medium-sized enterprises (SMEs) in Canada have contributed virtually all the net new job creation in the last decade. However, part of the reason for the narrowness of our exporting base may be the predominance of small- and medium-sized enterprises in the Canadian industrial structure and their lack of resources in providing managers with the expertise to deal with export markets. Small firms cannot draw on the range of corporate capabilities that larger firms enjoy and, hence, face severe

[8] Betcherman, et al., *The Canadian Workplace in Transition,* Queen's University, Industrial Relations Centre, 1994.

Figure 3
Factors Contributing to Growth
Mean Scores on a Five-Point Scale of Importance



Source: Statistics Canada, *Strategies for Success: A Profile of Growing Small and Medium-Sized Enterprises (GSMEs) in Canada*, August 1994.

challenges in improving their management skills. Consider the following two sharply contrasting sets of evidence.

- Baldwin's (1994) analysis of growing Canadian SMEs[9] indicated that:
  - management development is considered the most important growth factor for these firms; and
  - management is viewed as the most important internal source for innovation.
- A 1990 ISTC-sponsored survey[10] of 187 professionals involved in small-business management training presented the following results:

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[9] John Baldwin, *Strategies for Success: A Profile of Growing Small and Medium-Sized Enterprises (GSMEs) in Canada*, Ottawa: Statistics Canada/Industry Canada, 1994.

[10] Canadian Labour Market and Productivity Centre, *Management Training for Small Business in Canada*, April 1990.

- 62 percent of respondents believed that current Canadian small-business management capabilities were "poor" or "very poor";
- the majority of respondents rated small-business management capabilities as "low" in the areas of marketing, finance and budgeting, human resource planning and personnel management, management of technology, and strategic planning and leadership; and
- more than half identified either human resources/personnel management or strategic planning as the greatest unmet training need of Canadian small-business managers.

Lack of a Training Culture?

The description of the supply side of the market below clearly shows that a wide range of management development programs and services are provided by many different sources including consultants, public and private educational institutions, industry associations, financial institutions and governments. So why are businesses not taking advantage of these programs and services to improve their capabilities?

One contention is that management development is simply not an integral part of doing business in Canada. Several surveys support this position.

- In a survey of 1000 Canadian firms, Robert Loo[11] found that only 36 percent of firms had policies in place for management training and development, and only 11.5 percent of managers at all levels participated in development activities. Results also indicated that few organizations linked management development to their organizational philosophy or broader organizational

[11] R. Loo, "Management Training in Canadian Organizations," *Journal of Management Development*, 1991.

strategy. In contrast, a 1989 survey in the United States found that 84.2 percent of firms offered management skills development.

- The 1992 Conference Board research report on management and executive development revealed that:

  - only one third of responding firms had a distinct management and executive development budget;
  - managers and executives had, on average, only four to six days per year of training and development; and
  - stronger emphasis on total quality initiatives was forcing firms to change the training mix in favour of employee training, resulting in fewer resources for management and executive development.

- Industry Canada's Sector Campaign on commercial education and training services identified the absence of a training culture in Canadian business as a key impediment to the effective marketing of its services.

- In looking at the global challenge facing Canadian firms, one of the most significant findings of the Corporate Higher Education Forum was that the major obstacle to further progress in "internationalizing" Canadian management was not the business schools, nor governments, but business itself: "Canadian executives, for whatever reason, are uninterested in formal international management training."[12]

- According to the Prosperity Secretariat's Report[13] on management training provided by Canadian universities, if Canada is to develop fully the skills of its managers, and if the educational institutions are to be effective partners, key problems will have to be overcome:

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[12] Corporate Higher Education Forum, *Going Global*, 1988.

[13] S. Amos, *Management Training Provided by Canadian Universities in Support of Canada's Needs in the New Global Economy: Assessment and Recommendations*, prepared for the Steering Group on Prosperity, June 1992.

- a lack of a shared vision of Canada's future which creates confusion over the purpose and direction of many organizations;
- a lack of effective communications between managers and academics which hampers the ability of the universities to provide the management development that is needed in the workplace; and
- too many Canadian firms have adopted a short-term perspective that undervalues the long-term benefits of investing in the continuing training and development of managers.

3. THE MARKET FOR MANAGEMENT DEVELOPMENT: A CLOSER LOOK AT DEMAND AND SUPPLY

The market for management development is characterized by imperfect, and in some segments, asymmetric information.

On the supply side, there is a wide range of services available. But, in some cases, there is little or no attempt to assess systematically the needs arising from a radically transforming economy, and there is no co-ordinated information base on the range of characteristics (and quality) of services available. The market is very fragmented, and concentrates more on mundane topics, such as finance or accounting, rather than on strategic skills. It is not focused on the needs of small firms.

On the demand side, there is a double problem. Not only is Canadian management largely ignorant of the range of services available but, more important, is often unaware of its own needs. In addition, there is a lack of information about the critical performance impacts of investment in management skill development.

Demand

Development of management skills or "management education and training" covers a wide spectrum from basic, everyday requirements (e.g., the preparation of business plans, basic business finance, personnel administration and marketing) to more strategic decision making (e.g., management of technological change, organizational innovation and global marketing) to the enhancement of rare and abstract skills and attitudes (e.g., "visioning," leadership, charisma and creativity).

Clearly, no single definition can do justice to the diversity of management skill needs of Canadian industry, but three approaches — two conceptual and one somewhat more practical — can be helpful in understanding the demand side of the market for management development and information.

Management Development Pyramid

Figure 4 reflects the notion of hierarchy alluded to above. In this model, basic skills and core competencies are built on and further developed at successive stages of management sophistication. The figure conveys the notion of continuous learning based on a solid foundation of general education. But it also suggests the need for further, and continuing, enhancement of particular, specialized management skills and attributes. An important corollary is the tremendous range of opportunity for the myriad of suppliers — colleges, universities, private training suppliers and consultants — to fill that need.

This approach begs the question of whether the *pinnacle skills* and attributes — flair, creativity, vision and leadership — can be developed and enhanced. Or, are they simply innate? Though a useful starting point, such a highly stylized depiction of management skill development cannot, in reality, reflect the extreme diversity of Canadian firms and their managers.

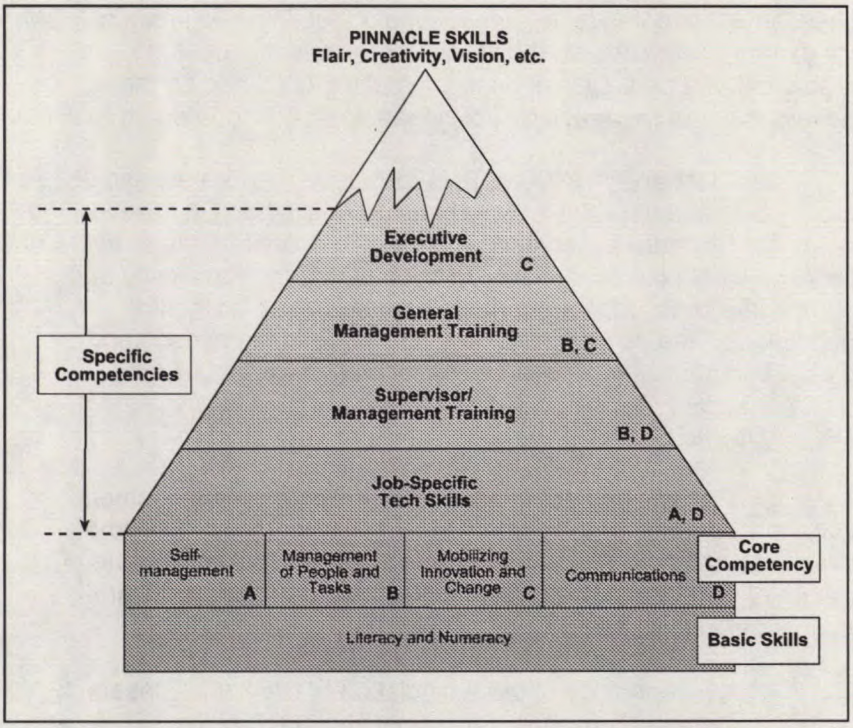
A second way of looking at the management development needs of Canadian business is to identify and concentrate on those management practices and strategies that are commonly considered the most critical in meeting the special new challenges of the so-called knowledge economy.

Management Skills for the Knowledge Economy

Management skills will increasingly reflect:

- the notion of knowledge and ideas as the critical factors of production, the key source of innovation and of growth;
- the need for innovations in organizational design and human resource development to complement and reap the potential of powerful new technologies;
- the increasing emphasis on quality as a central performance criterion; and
- the importance of a global mindset in assessing market potential and in identifying best practice.

Figure 4
Management Skills Pyramid



Source: Based on Rush and Evers, 1993.

Three broad management strategy types[14] are, therefore, critical. They come in various guises and combinations and go by different names but are often known as:

- organizational innovation (OI);
- total quality management (TQM); and
- the "new" human resource management (NHRM).

Taken together, they represent a nexus of strategies that constitute a logical response to ferocious global competition, a giddy

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[14] For more on the strategies and an overview of their uptake and impact, see Newton (1994).

pace of change and daunting market turbulence. The strategies are inextricably interrelated and mutually reinforcing. The continuous assessment of potential for improvement that is the hallmark of TQM, for example, depends on the flexible organizational setting, teamwork and participative decision making of OI and on the development of (and rewards for) ideas and skills inherent in NHRM.

OI, TQM and NHRM will inevitably give way to new and/or more powerful strategies (or, perhaps, to new labels). However, the empirical literature suggests that, for the foreseeable future, these strategies hold out the promise of contributing to productivity and competitiveness. Most important, they are based on implicit principles — the overriding importance of ideas, innovation and a global perspective — that should wear well in the longer run.

Diagnosis and Delivery

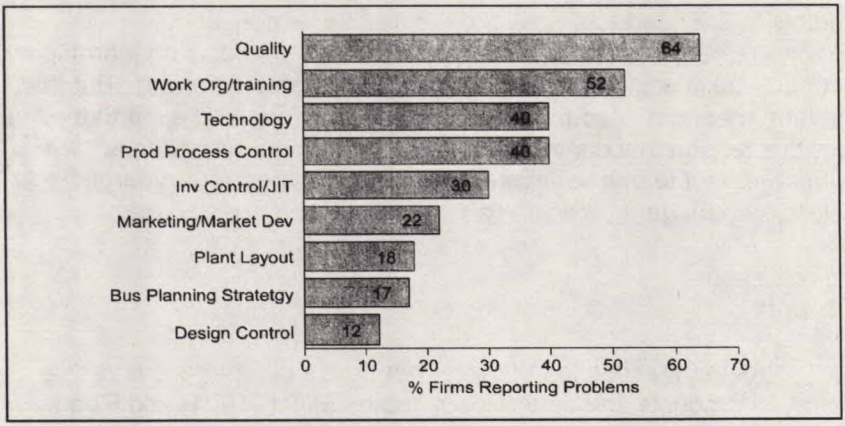
One surprising finding about the demand for management skills in Canada is that, in some cases, managers just don't know what their needs are and, in other cases, they misdiagnose the nature of their needs or problems. Two pieces of evidence are interesting in this regard.

- A recent study of the Association of Provincial Research Organizations (APRO),[15] highlights the fact that:

  - businesses typically do not identify management shortcomings as an area requiring improvement through training;
  - managers are better able to diagnose their difficulties through comparisons with other companies in their sector; and
  - there is a deficiency of intra-industry comparisons and benchmarking, as facilitated by the analysis of best practice techniques and technologies.

[15] Association of Provincial Research Organizations (APRO), *Problems and Opportunities of Small and Medium-Size Enterprises in Canada*, 1991.

Figure 5
Manufacturing Assessment Service, 1991-92



Source: Results from a client evaluation, August 1992.

- Industry Canada's experience with the Manufacturing Assessment Service reveals that some 40 percent of clients misdiagnosed their problem. In many cases, what firms had perceived as technology problems were, in fact, problems related to the efficient use of technology and needed action in key areas such as quality, work organization or training (Figure 5).

It is clear that an important dimension of the demand for management development services is delivery. Course offerings of educational institutions may be too rigid or irrelevant. Even custom-designed courses may be too costly and time-consuming. Most important, there are strong suggestions that many of the offered programs and services ignore how managers best learn and integrate knowledge. The 1992 Conference Board survey of large- and mid-sized firms indicated that about one third of large Canadian organizations relied on learning through experience as their sole vehicle for executive development. While it is random and can be costly (when mistakes are made), it is also the most powerful, inexpensive and efficient tool for management development. It has been shown that almost 60 percent of effective management development takes place in real time on the job. Managers learn and build better skills through experiences in practical situations —

through successes and failures — and have difficulty integrating knowledge acquired away from job situations. The Board's analysis points to the need to go beyond the traditional concept of "management education" and to place more emphasis on learning by doing — skill acquisition through practical problem solving. But this, in turn, means a need for access to advice, ideas and expertise. It is for this reason that central features of "learning organizations" are *management teams* composed of the complementary, synergistic skills of managers, executives and empowered employees.

Supply

As the first section of this paper points out, there is a vast array of products and services available. Miller (1994) and Reaney (1994) provided detailed descriptions. This section gives a sense of the scope and variety of supply and a brief description of some of the more promising initiatives.

Federal Programs

There are various "horizontal approaches," not specific to a particular industry.

- The Federal Business Development Bank's (FDBD's) Management Services Branch offers general management consulting, information kits, seminars and workshops, and mentoring.

- The International Trade Centres (ITC) operated by Foreign Affairs and International Trade Canada, and Industry Canada provide information, counselling, seminars on trade opportunities and financial assistance.

- The regional offices of Industry Canada offer consulting, information and referral services on general management issues. Regional Operations Headquarters maintains expertise in quality issues and interfirm comparisons, and a number of Technology Outreach Program (TOP) centres advise on the management of technology. The Canada Business Service Centres will increasingly act as the entry

point and conduit to management development and information services.

- The Industrial Research Assistance Program (IRAP) provides counselling on a variety of technology-related issues, and the Canadian Technology Network will tie IRAP into a broader network of research institutions.

National Sectoral Approaches

- Industry Canada's Sector Campaign is a flexible instrument that has permitted the department's industry sector branches to address three kinds of issues:

  - diagnosis of corporate strengths and weaknesses as the foundation of management knowledge;
  - skill development of managers through courses, seminars and interchanges; and
  - strengthening of the private sector training industry itself. (The Sector Campaign on Commercial Education and Training has identified industry fragmentation, failure to market and the lack of co-ordinated information and networking as key barriers to the success of the industry.)

- Human Resources Development Canada has established a number of sector councils that examine training issues. Studies frequently point to management as a key issue.

- Agriculture Canada's National Farm Business Management Program, delivered through provincial boards and jointly funded with the provinces, is a pro-active tool to encourage farm survival.

Regional Programs

- A wide range of programs in the Atlantic region are funded through federal–provincial agreements and the Atlantic Canada Opportunities Agency (ACOA). The latter offers a comprehensive range of management training services to SMEs, such as:

- marketing and business plan development services;
- management and technical support training; and
- industry–education personnel exchange.

- The Ministère de l'Industrie, du Commerce, de la Science et de la Technologie du Québec (MICST) assists small companies with diagnostics and advanced management tools.

- In Ontario, there has been less emphasis on management skills to date, although a number of programs offer general services to business. One relatively new program is the Ontario Innovation and Productivity Service which offers strategic business assessments of barriers to growth and the preparation of an action plan.

- Alberta's Department of Economic Development and Tourism offers seminars targeted to management needs, while British Columbians look to the new provincial Skills Council for management development initiatives. The Industry Canada office in Vancouver continues to play a leadership role in executive training in the forestry and seafood sectors.

The most obvious drawback to this plethora of government programs is fragmentation: the absence of a co-ordinated approach means overlap, duplication and uneven quality. While a more co-ordinated single-window "system" must be the ultimate objective, there are some very promising individual government-sponsored initiatives that may serve as models. Examples may be drawn from various parts of the country, but some of the most interesting are in Quebec.

- Industry Canada's Montreal office has demonstrated how a combination of software, limited consulting time and group seminars can deliver effective diagnosis at a reasonable cost.

- In Quebec, the MICST, along with the city of Montreal, the Federal Office of Regional Development for Quebec (FORDQ) and private sector organizations sponsors Inno-

centre to address the management needs of high-tech, high-growth companies.

- A new networking approach to management skills is being developed through a partnership under the Montreal Board of Trade, with MICST, the Société de développement de la main-d'oeuvre du Québec, and the federal departments of Industry and of Human Resources Development.

Colleges and Universities

Community colleges and technical institutes provide services at over 700 campuses. Courses range from general management and business administration to more specialized offerings in such areas as marketing or human resource management. As community-based institutions, the colleges have made efforts over the years to work with local employers to assess needs and course design. This is reflected in the increasing number of partnership arrangements and programs for entrepreneurship and small business. However, a recent report for Industry Canada[16] indicated that information access is a problem for managers seeking skill development, as is the lack of flexible, innovative and timely methods of delivery.

The latter has been a particular challenge for the university sector which, until recently, and with notable exceptions, remained aloof from the vocational needs of business and was wary of becoming the handmaiden of industry.[17] While many university courses may be relevant to the development of management skills, it is the business school programs, especially the MBA, to which managers look. These programs are changing in important ways.

- In the 1970s and 1980s, business school courses were in high demand. This growth period was characterized by efforts to gain academic respectability through more

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[16] Reaney (1994).

[17] As evidence of shifting attitudes, see the Council of Ontario Universities (1994).

emphasis on research and to establish management as a "science."

- To many observers, this drew management studies away from the real needs of industry toward the esoteric, the theoretical and the impractical.

- Now virtually every business school is undertaking a thorough re-examination of mission, priorities, programs and delivery systems as a result of a number of pressures:

  - a fall-off in demand for the traditional MBA product;
  - the resource squeeze on the universities in general;
  - a national economic agenda that demands that the university's mission include a contribution to productivity and competitiveness through development of human resources and pursuit of relevant research; and
  - clearer messages from the business community about the need for continuous learning, information about best management practices, accessible relevant research, a global perspective[18] and more flexible delivery of services.

Innovations include:

- student internships and work placements;
- consulting services for SMEs;
- redesigned MBA programs;
- business advisory councils; and
- short courses, conferences and special reports.

Student Internships, Work Placements

A number of universities have started trade development centres including Manitoba, Dalhousie, Saskatchewan, British Columbia, Queen's and the École des Hautes Études Commerciales.

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[18] Huggett (1994) describes a Canadian initiative among the four largest co-op universities to organize work placements in Japan for science and engineering students.

Some receive support through the International Business Education Program of Foreign Affairs and International Trade Canada.

One example is the Laurier Trade Development Centre of Wilfrid Laurier University which provides students with hands-on business experience through practical work with an industrial partner. It assists SMEs to respond to international opportunities and challenges, and contributes to the development of export markets. The Latin America International Business Initiative is a partnership with 22 companies, focused on Mexico. MBA students conduct market research for companies wishing to develop new operations or markets, including two weeks of field work in Mexico. Students receive a credit, and the company receives a report for $4000.[19]

Consulting Services for SMEs

Several initiatives provide consulting, by students, for credit, integrated with formal course work. A good example of this is the Dobson Centre for Entrepreneurial Studies at McGill. It combines the teaching of entrepreneurial courses to students in both management and engineering, and provides consulting to SMEs (498 consultations in 1991-92), and seminars and workshops. Students are involved as outside consultants.

Redesigned MBA Programs [20]

A recent article[21] quotes Harold Leavitt of Stanford as saying that North American MBA programs were systematically

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[19] While all participants agreed on the value of the program, some problems have arisen due to inexperienced students working with small SMEs which do not have time to supervise their activities. Industry representatives felt that the most appropriate students were those returning to school after several years of experience in the working world. As a result, many SMEs are reluctant to work with such a program even though those who have been involved appear highly enthusiastic. Another problem is the need for budgets that supplement normal university resources.

[20] See Lewington (1994) for a description of the use of multimedia technologies in the delivery of MBA programs.

[21] Deverell (1994); on reform of the MBA program see Kainz (1994).

transforming "well proportioned young men and women ... into critters with lop-sided brains, icy hearts and shrunken souls."

Many universities are re-designing their MBA programs, both in content and in duration and fee structures. Witness the emergence of the executive MBA program. Restructuring MBA content, using the latest technologies and providing access to the best resources available internationally all require resources beyond those available from universities. However, current funding mechanisms in most provinces do not permit institutions to add supplementary fees to augment revenues. An alternative is a full cost recovery approach, such as Queen's University is implementing.

This segment of the market is clearly undergoing a substantial change characterized by impressive innovation and the more extensive use of partnerships. An exemplary case of an innovative partnership is described in the box below.

Business Advisory Councils

Over two thirds of business schools have an active council in place. The role of the councils is moving from lobbying to being an active source of information and advice, e.g., on the redesign of MBA programs.

Business schools have also joined together to create national structures promoting interaction with the private sector, e.g., the Corporate Higher Education Forum and the Corporate Council for Management Education, bringing together business school deans with CEOs.

Short Courses, Seminars, Conferences and Special Reports

Business schools are giving greater emphasis to focused meetings and reports and publications that address the need for timely and expert information. For example, the Centre for International Business at the University of Toronto has explicitly identified the business community as the prime target for its publications.

However, much remains to be done in this area. An interview by Industry Canada with the Canadian Centre for Management Development revealed that Canadian universities are generally much less responsive than those in the United States to packaging focused seminars and reports to meet specific skill development needs.

A UNIVERSITY-BUSINESS PARTNERSHIP TO PROMOTE MANAGEMENT IN THE GLOBAL ECONOMY

The Far Horizons Competition operated by Queen's University, in partnership with the Hong Kong Bank of Canada, is unusual in that it involves faculty and students from a network of universities with business representatives in an activity that is simultaneously a competition, a conference and a university–business consultation. It centres on a competition, open to MBA students at any Canadian university that wishes to participate.

Each year, a theme related to world trade is selected and participating students submit a paper based on course work or research they have conducted during the past year. Each course professor can choose just one paper from his or her class for submission. A faculty–industry panel then selects the 10 best papers which are presented at a two-day conference each spring. (Ten additional "honourable mentions" are also selected, and the professors and students involved are invited to the conference). The Hong Kong Bank subsidizes the travel and other expenses of the 20 students (or teams) and their professors. Professors of the 10 students whose papers were selected for presentation receive a further $1000 research stipend and a $500 prize.

The conference also involves business and government representatives in active discussion of the papers. A separate faculty–business panel associated with the conference evaluates the implications of the students' work for future curriculum design and selects the theme for the next year's competition. The amount of feedback the university receives from the business representatives at the conference, through active discussion of the presented work of 10 of the "brightest and best" from across Canada, is truly significant and appears to be having a real influence on programs at Queen's (particularly in international business) and on the perceptions of faculty members from other universities who participate in the conference. The exercise is an unusual networking opportunity for business and government representatives, and for students and faculty from business schools across Canada.

Source: Berry (1994).

Private Sector Commercial Education and Training

Private "career colleges" have mushroomed in recent years, particularly in British Columbia and Ontario, and there are now over

1000 across the country. To these must be added the myriad small companies offering a range of consulting services which may include specific management development services.

Career colleges typically charge higher fees than community colleges for comparable courses, but argue that their offerings are more customized and of shorter duration (so for full-time courses, foregone income is minimized). They also claim that their more intimate links to the business community ensure a superior placement rate for their graduates.

The sector is dominated by small entrepreneurial businesses which are flexible and responsive, and offer a wide range of services. However, the sector lacks cohesion and tends not to have a sense of identity. It also lacks standards and, according to the Industry Canada Sector Campaign, does a poor job of marketing.

4. IMPERFECT INFORMATION

The description of the market for management development given above points to an industry with widely divergent consumer needs and an equally heterogenous pattern of supply and delivery. Although the two sides of this market appear to be identifiable, the empirical evidence of management skill deficiency makes the "market failure" hypothesis discussed earlier rather persuasive. This section marshals some evidence to support the argument that the market is characterized by imperfect information.

- Industry Canada's Sector Campaign on the commercial education and training industry shows that:

  - firms, both small and large, lack the time, money, information and knowledge base to assess their training needs and select appropriate training and development programs and services;
  - information on the key players in the commercial education and training services industry is often incomplete or non-existent;
  - the training sector's capabilities are not well-known among Canadian businesses, largely because the training sector has not identified clients' training needs, nor has it planned a cohesive and aggressive approach to the marketplace; and
  - the fact that the various training suppliers are not part of a co-ordinated network or organization makes it difficult for businesses to get information on the training suppliers and to access their products and services.

- The CLMPC study on management training for SMEs highlighted the lack of a simple and inexpensive source of information on available training programs in Canada as a key factor impeding businesses from taking advantage of affordable training opportunities. This helps to explain why business remains unaware of the full range of training capabilities offered by training industries, including the provision of consulting services and assessment of training needs, which can provide businesses with the knowledge base needed to select appropriate training programs.

Many businesses, even if they identify their needs, face barriers to information access. Managers have difficulty finding practical support and striking alliances to learn from others. The APRO study cited above suggests that, while business networks and strategic alliances can be valuable sources of information and advice, competitive pressures may inhibit firms from entering such relationships. And, as always, small firms have special information problems including, in particular, difficulty in accessing affordable diagnostic and management development tools and services.

The experience of the AMTAP program was cited earlier to illustrate an aspect of misdiagnosis: managers of a program originally oriented to problems of technology adoption and application increasingly found themselves responding to requests for information and advice on how to manage in the new technological context. Supporting evidence comes from the Manufacturing Assessment Service (MAS) experience, as shown in Figure 5.

The MAS and AMTAP experiences point out the importance of, and the critical need for, skills not only to understand and use, but also *to manage* technology. In this regard, there is evidence that universities have not gleaned, or at least responded to, this kind of information.

- A multi-disciplinary approach to management training in the post-secondary educational system is missing. A review for the then Industry, Science and Technology Canada[22] of the status and availability in Canadian colleges and universities of courses on either management of technological innovation or technical entrepreneurship found that:

  - only eight engineering faculties and not one science faculty in Canada offered these types of courses to their students;

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[22] T.E. Clarke, Stargate Consultants Limited, prepared for ISTC, *Review of the Status and Availability in Canadian Colleges and Universities of Courses or Programs Dealing with the Commercialization and Adoption of Science and Technology*, March 1990.

- although such courses were offered through some business faculties, few students from science or engineering faculties were able to take them because of timetable conflicts or the lack of course prerequisites;
- students said that such hybrid courses "are nice to have but are not really required";
- instructors felt that their academic careers had not advanced at the same pace as their peers' since teaching in these areas was not accepted as valid;
- there was limited or no information on the availability of such courses in either universities or colleges; and
- as a result, Canadian post-secondary educational institutions were contributing to the "two cultures" syndrome.

- The work of the ISTC Sector Campaign and the analyses of Reaney (1994) and Berry (1994) suggest that, due in large part to information deficiencies, management education and training services are too often focused on traditional management areas (e.g., marketing, financing, exporting, production, financial management, etc.). Only a few of these services recognize the need to develop the innovative and organizational capability of managers and executives, and to link and integrate the various areas of the management challenge into a globally oriented and comprehensive approach to strategic management.

- Industry needs to work more closely with colleges and universities to help them develop management training curricula better tailored to the new set of skills required from managers in a globalized trading environment.

But there is another important information gap that has to do with access to leading edge research in management science in the universities and (to use a science and technology analogy) the transfer of "management technology" to industry. That is, just as it is important to draw on the R&D work of the universities in "hard" physical science and technology, it is also crucial to have access to the innovations in organization theory and management design that become the cutting edge of industrial application.

5. POLICY DIRECTIONS

The main thrusts of the paper so far may be summarized as follows.

- There is convincing evidence that, faced with the challenges of the evolving knowledge-based economy, Canadian management skills may be found wanting.

- Evidence on the demand side of the market points to a sub-optimal commitment to management development and, in some cases, to the failure to identify the needs correctly.

- While the volume and range of management development products and services is considerable, there are important qualitative deficiencies with respect to flexibility, relevance, cost and accessibility. Communication with clients — to identify needs and to advertise services — is inadequate.

- The essential reason for the mismatch is imperfect information.

- The foregoing analysis suggests that four aspects of this information problem need to be addressed urgently:

  - provision of a low-cost, easily accessible, diagnostic entry point to help firms accurately assess their needs and identify where and how to look for possible solutions;
  - provision of a means to access expertise, advice or counselling to fill the identified needs;
  - access, through a variety of media, to information that permits benchmarking against best practice; and
  - quality assurance through screening, evaluation and validation.

While these latter areas appear, at first glance, to be logical targets for government policy development, it may be useful, before considering particular approaches, to state very briefly the rationale for a government role, and to set out some broad principles that might guide such a role.

A Role for Government and Some Guiding Principles

The evidence so far points to a failure of the market to meet adequately Canadian industry's needs for management skills. Market failure, stemming from the externalities that typically characterize investment in human resources development or, as in this case, from imperfect information, is a classic rationale for government involvement. In the case of human resources development generally, and management development in particular, a case can also be made that, in the context of the emerging knowledge-based economy, a high "public good" premium can be placed on the nurturing of a first-class national skill set for the generation of ideas and innovative capacity.[23]

Once the general case is accepted, the more specific case for Industry Canada's role is not hard to make. The department's ultimate objective is to design and steer a micro-economic agenda to promote productivity, competitiveness, growth and jobs. The most important means to these ends involve technological diffusion and industrial innovation on all fronts. These, in turn, depend critically on the skill levels of workers and managers. When the market, unaided, appears to underinvest in such skills, government facilitation is indicated. Indeed, as the description of the supply side of the market, discussed earlier, shows, various government initiatives are already in play. What appears to be missing is a concerted, integrated approach to "making the match" between demand and supply — in short, an "agency" or "brokerage" role to bring coherence to the market.

In performing this role certain guiding principles should be observed.

- First, governments should act as catalysts and facilitators, leaving actual implementation, to the fullest extent possible, in the hands of the private sector.

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[23] To turn the argument around, the opportunity cost of inaction is continuing deficiency on a critical aspect of competitiveness and, thereby, lost opportunities for productivity gains, growth and jobs.

- Second, whenever possible, government initiatives should build on existing resources and capabilities. Fiscal realities are such that major new cost commitments may prove to be infeasible.

- Third, and related, any costs should be recovered and or shared to the extent possible.

- Fourth, initiatives should be based on partnerships involving federal departments, other levels of government, industry clients and various suppliers including the education system. Such institutional arrangements should have a local, community-based focus and involve local institutions and intermediaries.

- Fifth, and perhaps most important, initiatives should be motivated by the needs of users. While this appears eminently reasonable, the foregoing analysis suggests that it might pose a quandary. Getting firms, particularly SMEs, to recognize the importance of management skill development as well as their deficiencies, is no mean task. Thus, a central component of any strategy must be a focus on awareness, advocacy and communication.

Elements of an Approach

One generic approach to the information problems identified in this paper is the establishment of a network of management excellence,[24] linked, in turn, to other complementary networks. Such a network would be the means to perform three basic functions, i.e., three stages of a "production function" for the provision of information products and services to clients (Figure 6).

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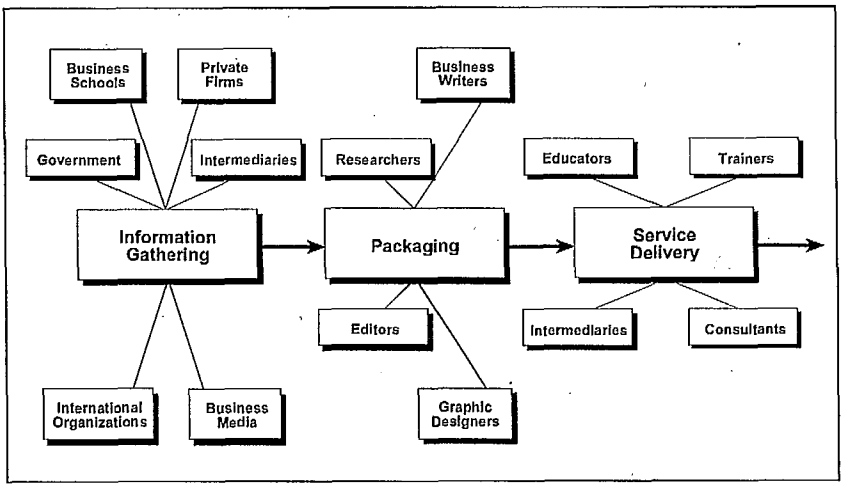
[24] The terminology is not important — it's the function that matters. For a more detailed description see the draft paper by Industry Canada consultant Fedorovich (1995).

Figure 6
A Network of Management Excellence



Information Gathering

This is the first stage or function and consists of the systematic, comprehensive and continuous acquisition and assembly of management expertise — data, data sources, advice, opinion, research results, etc. — from a wide variety of sources. These would include business schools and other educational institutions, governments, research institutions, private trainers and consultants, international organizations, the media and business firms and intermediaries. Since a non-critical evaluation of all information would quickly swamp even sophisticated information management systems, a screening, evaluation and selection function would be necessary to ensure that only the most useful and credible information is available.

Packaging

This second stage or function refers to the transformation of the basic information into useful products and services to meet clients' needs. Its processes include editing, synthesis and translation to provide such products as reference materials, diagnostic tools, case studies, best practices and course modules. It

is a value-added process involving the skills of business writers and editors, researchers and graphic designers.

Service Delivery

This third stage or function is the means of putting the products and services of stage two into the hands (or brains) of clients. As such, it involves educators, trainers, consultants and other intermediaries such as trade, professional or industry associations. Most important, however, it involves the innovative use of technology to maximize direct and easy access by clients themselves. Various combinations of electronic bulletin board, fax hotline, disk, cassette and video can be used for this purpose.

In this generic network model, partnership is the key. Intermediaries play a central role with a wide variety of management specialists and consultants, government program administrators and counsellors, bank advisors and professional, trade and industry associations linking clients and suppliers. Their co-operation is crucial to this model. The attraction to involve such intermediaries lies in three principal elements.

- First, the intermediaries gain access to an expanded network of expertise, advice and strategic intelligence.
- Second, they become an integral part of a co-ordinated system that, among other things, establishes their credentials.
- Third, it affords ready access to the target market of clients who need their services.

Some Specific Initiatives

One current initiative at Industry Canada is clearly consistent with the broker and catalyst roles for government and the principles for policy formulation set out above. It incorporates the main structural features of the generic model and involves the construction of an information superstructure in the specific form of a management information network to permit more efficient

interchange among clients, intermediaries and suppliers of management development products and services.

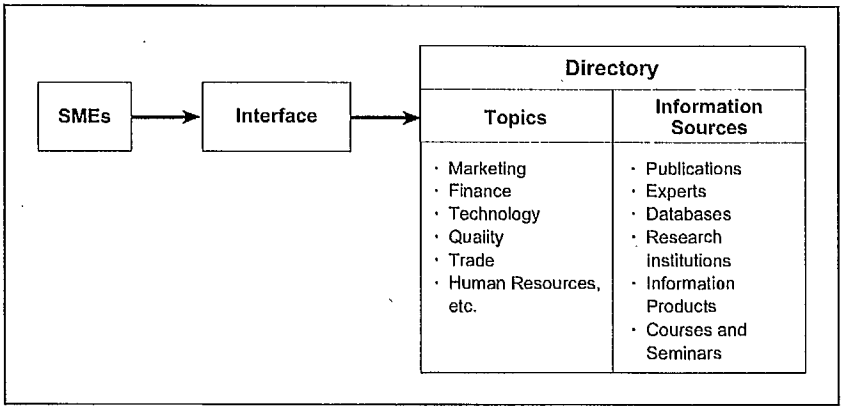
Intended primarily to serve SMEs, the network would build on the existing product and service offerings of various suppliers including governments, universities, public and private vocational schools and colleges, consultants, existing networks (e.g., Canada Business Service Centres, the Canadian Technology Network, IRAP) and intermediaries (e.g., professional and industry associations, banks, the National Quality Institute). A comprehensive partnership among Industry Canada, suppliers and intermediaries would be responsible for the design, development, marketing delivery, evaluation and maintenance of a management information directory as shown in Figure 7. Clients, principally SMEs, would use an interface to choose topics and access private and public sector sources of management expertise and information.

The basic approach stems from the conclusion that while the need for a wide range of management development products and services is evident and, while there is no shortage of suppliers, what is missing is the co-ordinating and brokerage function to marshal the present piecemeal activities in a comprehensive fashion. Thus, the information provided via the directory would have a range of critical dimensions. It would provide information and advice by type of *product or service* (such as seminars, courses, diagnostic tools, consultants, publications, etc.) by *sector and industry*, by *management function* (such as human resource management, finance, exporting, management of technology, etc.), by *location* (local, provincial, regional) and by *supplier and/or intermediary.*

Ease of use would be assured by permitting access to clients directly or through an intermediary and also by using a variety of formats and media to meet particular clients' preferences — diskette, CD-ROM, return fax, hard copy, etc. Clients' assurance of quality control would be achieved through initial product and service testing and subsequently through systematic, ongoing evaluation.

A second, and intimately related initiative by Industry Canada, involves the identification and assessment of diagnostic tools for SMEs. Given the foregoing analysis and conclusions, access to

Figure 7
Management Information Directory



such tools would clearly be one of the most valuable functions of the management information network described above. Accordingly, Industry Canada has participated in the assessment of two such diagnostic tools, to determine their impact on the economic performance of user companies and to explore the possibilities of further testing, development and more widespread application in Canada.

The diagnostic tools in question are the Readiness for Change and Total Company Assessment products of the Saskatchewan Research Council (SRC) and the Manufacturers Assessment Methodology and Market Scout tools of the Alberta Research Council (ARC). These two internationally respected research organizations have applied and evaluated their tools in Canada and abroad and are now exploring the possibility of forming a strategic alliance to integrate these tools and offer them, under licence, to business consultants. The proposed diagnostic tool has six phases.

- Phase 1 consists of a "before" customized benchmarking report of how the SME ranks with North American companies of similar size, products, industry, sales and activity.

- Phase 2 determines the SME's readiness for change.

- Phase 3 is a total company assessment which examines how the SME establishes and achieves its corporate objectives and goals, how it manages its human and financial resources, manufacturing and product development processes, marketing program, and internal and external networks. (If the above diagnostics indicate that the company requires further assistance to streamline its manufacturing operations or to investigate opportunities for new markets or product diversification, the company can opt for phases 4 or 5, or both. Regardless of the choices, all companies would be eligible for phase 6 benchmarking two years after completion of phases 2 and 3).

- Phase 4 is a manufacturing assessment to review the SME's operations to determine productivity and manufacturing improvements to reduce manufacturing costs, increase manufacturing capacity and improve its competitiveness in domestic and international markets.

- Phase 5 is a market potential/growth assessment which identifies new markets for the firm's existing product line and any changes that should be made to its product/process to penetrate those markets.

- Phase 6 consists of the "after" assessment and customized benchmarking report. This is performed two years after the completion of the holistic company assessment.

Evaluation results of both these tools suggest impressive benefits to participating companies on a variety of performance criteria including sales, productivity, costs, quality and profitability. Clearly, these initiatives are wholly consistent with the model of the management information network outlined above. An effective diagnostic tool addresses one of the major information gaps identified in this paper — the inability of too many Canadian firms to assess accurately their management development problems and needs. The very process of identification leads to immediate responses that have salutary effects. But, in addition, diagnosis is the entry port to the directory — the means to tap and exploit the wealth of strategic information that the network infrastructure provides.

CONCLUSIONS

The principal conclusion to be drawn from the foregoing can be summed up in a word: mismatch. It's not that there isn't a demand for management skills. And it's not that there's any great shortage of supply — suppliers, intermediaries, networks and information sources exist. What is missing is the matching function or "brokerage" to bring the two sides of the market together efficiently. Herein lies the role for government generally and the industry department, specifically.

The problem of imperfect information which characterizes the Canadian market for management skills development should be addressed in three highly complementary ways.

- First, there is an urgent need for effective, accessible low-cost diagnostic tools so requirements can be accurately identified and clearly articulated.

- Second, there is a need for a comprehensive infrastructure which matches requirements with appropriate intermediaries, suppliers and information sources.

- Third, the myriad players on the supply side need greater co-ordination, a more collaborative approach and more effective communication of their capabilities.

The initiatives described above appear to be a highly promising approach to the first two of these needs. And the sector competitiveness framework exercise affords the opportunity to bring greater cohesion and coherence — more "industry identity" — to the commercial education and training sector.

As these initiatives unfold, a few observations might be kept in mind. The first is the *crucial role of partnerships*. Such arrangements are the optimal approach to the design, implementation and maintenance of the kind of information infrastructure exemplified by the proposed management information network. In addition, the growing number of business–education partnerships encouraged by, *inter alia*, the Canadian Chamber of

Commerce and The Conference Board of Canada, are themselves rich sources of information and expertise. The institutional arrangements and modus operandi of various kinds of partnerships may provide valuable learning models. A partnership inventory would, therefore, be a valuable component of a management information network.

The second, and related point is the *need for Canadian firms to have more and better access to the "research" end of the management science spectrum* — to be aware of, understand and apply leading-edge management strategies and techniques. Only recently, has the Network of Centres of Excellence program been extended to cover applied research in management fields. Other arrangements need to be explored. In this context, the experience of the United Kingdom's "Teaching Company Scheme" would be worth evaluating. Established in 1975, it sets up partnerships between academic institutions and companies to bring benefits to industry and academic institutions and to develop a group of high-quality, young, technical managers. Its principal objectives are:

- to facilitate the transfer of technology and the diffusion of technical and management skills, and to encourage industrial investment in training, research and development;
- to provide industry-based training, supervised jointly by academic and industrial staff, for young graduates intending to pursue careers in industry; and
- to enhance the levels of academic research and training relevant to business by stimulating collaborative research and development projects and forging lasting partnerships between academia and business.

There should now be sufficient accumulated experience with the program to draw out some useful lessons.[25]

Finally, the "network of networks" that would represent a mature stage in the evaluation of the management information

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[25] See, as an example, Senker and Senker (1994).

network, or some variant of it, needs to be nourished by a concerted program of research comprising a number of elements. On the demand side, for example, further work is required to identify and analyze business' needs for management development. In this connection, it is interesting to note the recent recommendations of the British Columbia Chamber of Commerce[26] to form an Institute of British Columbia Business to nurture leadership and management skills. The institute would, among other things, conduct in-depth analysis of comparative strength in skill needs, identify current and projected shortages and, most important, *communicate them to the education system.*

Next, research is needed to feed and enrich the benchmarking and best practice component of the management information network. To what extent are the various kinds of policies, programs and practices[27] adopted in Canada and abroad? How have firms, in various industries and locations (in this country and abroad), and of various sizes, tackled the challenge of building innovative learning organizations and enhancing management skills? What lessons — both do's and don'ts — can be learned from this experience?

In this context, two areas of research, both of an evaluative nature, appear to merit priority. One has to do with performance outcomes: the benefits and costs of management skills development and how they affect the bottom line. Such analysis is notoriously complex because of the problems associated with disentangling the influence of the many factors at play, and their interactions. But, there is a need for further empirical work. The salutary effects of management skill enhancement appear, at first glance, intuitively obvious. However, it costs time and money, and it is enormously difficult to marshal the hard empirical evidence that relates management development to criteria such as sales, productivity, costs, quality, profits, etc. While such analysis may be beyond our methodological capabilities, it is important, through case studies for

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[26] British Columbia Chamber of Commerce (1994), *Moving Forward: The Vision of B.C. Business.*

[27] In this context the recent review of advisory consultancy and industrial extension services in 13 countries by Vickery and Blair (1995) is very useful.

example, to continue to amass the kind of indicative evidence that helps substantiate the intuitive rationale.

A final part of the puzzle concerning what works, what doesn't and why, has to do with institutional arrangements — partnerships. A comprehensive analysis of various forms of partnership in a variety of settings, their experience and efficacy, could be a valuable resource for developing industrial policy generally and human resource development policy, in particular, especially if emphasis is placed on the appropriate role of government in partnership. For the "new industrial policy" in which government's role is to be the catalyst, the broker, the facilitator of knowledge creation and disseminator of strategic information, effective partnerships are the key to success.

BIBLIOGRAPHY

Advanced Manufacturing Technology Application Program (1991). *Evaluation Report.*

Amos, S. (1992). *Management Training Provided by Canadian Universities in Support of Canada's Needs in the New Global Economy: Assessment and Recommendations,* Report prepared for the Steering Group on Prosperity.

Association of Provincial Research Organizations (1991). *Problems and Opportunities of Small and Medium-Size Enterprises in Canada.*

Baldwin, J. (1994). Strategies for Success: *A Profile of Growing Small and Medium-Sized Enterprises (GSMEs) in Canada,* Ottawa: Statistics Canada/Industry Canada.

Berry, J. (1994). *Innovative Partnerships: Canadian University Business Schools and the Private Sector, S*tudy for Industry Canada.

Betcherman, G., et al. (1994). *The Canadian Workforce in Transition*, Kingston: Queen's University Industrial Relations Centre.

British Columbia Chamber of Commerce (1994). *Moving Forward: the Vision of B.C. Business.*

Canadian Manufacturers' Association (1992). *The Aggressive Economy, Competing to Win*, pp. 106-107.

Clarke, T.E. (1990). *Review of the Status and Availability In Canadian Colleges and Universities of Courses or Programs Dealing with the Commercialization and Adoption of Science and Technology.*

CLMPC (1990). *Management Training for Small Business in Canada.*

Conference Board of Canada (1992). *Management and Executive Development in a Changing World.*

Corporate Higher Education Forum (1988). *Going Global.*

Council of Ontario Universities (1994). *Partners in Progress.*

Deverell, J. (1994). "Business Schools Overhaul MBAs," *Ottawa Citizen*, Sept 15.

Fedorowicz, J. (1995). "Management Information Network: Business Plan," Mimeo.

Hudson Institute Canada (1991). *Workforce 2000 Competing in a Seller's Market: Is Canadian Management Prepared?*

Huggett, S.A. (1994). "Work Placement in Japan: the Canadian Co-op Japan Model," *Industry and Higher Education*, June, pp. 85-89.

International Institute for Innovation (1992). *The Learning Organization: Managing in Turbulent Times*, Banff Centre for Management.

Kainz, A. (1994). "Earning an MBA through the airwaves," *Ottawa Citizen,* Sept. 15.

Lewington, J. (1994). "Downloading on the Information Highway," *Globe and Mail,* Sept.14 p.1.

Loo, R. (1991). "Management Training in Canadian Organizations," *Journal of Management Development.*

Miller, P. (1994). "Management Skills Building Initiative: Survey of Resources and Gap Identification," Mimeo, Industry Canada.

Newton, Keith (1994). "Management Strategies for Productivity and Competitiveness," Mimeo, Industry Canada.

National Advisory Board on Science and Technology (1991). Report of Human Resource Development Committee.

OECD (1988). *Science and Technology Policy Outlook.*

Reaney, C. (1994). *Management Training and Development: A Look at the Supply Side,* Consultant's report for Industry Canada.

Rush, J. and F. Evers (1993). "Making the Match: Skill Supply-Demand Gap in Canada," *Industry and Higher Education,* June, pp. 73-78.

Senker and Senker (1994). "Transferring Technology and Expertise from Universities to Industry: Britain's Teaching Company Scheme," *New Technology, Work and Employment,* vol 9, no. 2, pp. 81-92.

Smith, H.L. and M. Atkinson (1992). "Industry-academic links and local development: the case of Ottawa," Industry and Higher Education, Sept., pp. 151-160.

Van Houten, S. (1993). "Time to Fully Utilize Canada's Greatest Asset," *Plant,* Aug. 16.

Vickery, Graham and Louis Blair (1995). *Boosting Businesses: Advisory Services*, Paris: OECD.

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