

THE IMPACT OF EMERGING INFORMATION TECHNOLOGIES
ON
INTERNATIONAL TRADE PROMOTION

by

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Abstract

Two fundamental forces impacting trade and market participants worldwide are globalization and technological innovation. International trade opportunities created by falling trade barriers also intensify competition as a rising number of firms fight for a share of export markets. Advances in information technology (IT) enhance business processes and alter trading patterns. Organizations utilize IT not only as a source of competitive advantage but often as a necessity to their survival.

In the midst of expanding international trade and technological capacities, a broad spectrum of organizations offer services intended to improve the ability of companies to effectively enter and compete in international markets. These organizations range from private consultancies focused on specific industry sectors to national trade promoters offering services to firms nationwide, to international institutions working to strengthen global trade in general.

A wide range of emerging IT are used by trade promotion organizations. However, budgetary, operational and organizational constraints tend to limit IT adoption by most trade promoters. Like the companies they serve, national trade promotion organizations must assess their IT needs relative to the organization's goals and business processes.

This paper examines the impact of emerging technologies on the trade promotion function. Particular emphasis was given to the Canadian government's Department of Foreign Affairs and International Trade (DFAIT) in a case study. Based on interviews with trade promotion officers, various government documents and a literature search, we

attempted to identify applications of emerging IT that could benefit trade promotion organizations, especially DFAIT.

Table of Contents

Abstract	ii
Table of Contents	iv
List of Tables	vi
List of Figures	vii
Chapter 1: Introduction	1
1.1 Thesis Objective	1
1.2 A Note on Definitions and Abbreviations	3
1.3 Analysis Process	4
1.4 Report Organization	6
Chapter 2: Emerging Information Technologies	6
2.1 Chapter 2 Overview	6
2.2 Emerging IT Important to Trade Promotion	7
2.3 Chapter 2 Summary	11
Chapter 3: Trade Promotion Organizations	11
3.1 Chapter 3 Overview	11
3.2 Three Types of Trade Promotion Organization	12
3.3 The Operating Environment of Trade Promotion Organizations	15
3.4 National Trade Promotion Organizations	17
3.5 Organizational Effects of Emerging IT on Trade Promotion Organizations	19
3.6 Chapter 3 Summary	23
Chapter 4: The Use of Emerging Information Technologies by Trade Promotion Organizations	23
4.1 Chapter 4 Overview	23
4.2 Current Use of Emerging IT by Trade Promotion Organizations	23
4.3 Potential Use of Emerging IT by Trade Promotion Organizations	29
4.4 Chapter 4 Summary	34
Chapter 5: Case Study: The Department of Foreign Affairs and International Trade	36
5.1 Chapter 5 Overview	36

5.2 Canadian Trade Promoters	36
5.3 Trade Promotion by the Federal Government.....	37
5.4 DFAIT's Current Use of IT	39
5.5 Constraints to the Use of Emerging IT	43
5.6 Chapter 5 Summary	45
Chapter 6: Conclusions	45
6.1 The TPO as an Information Conduit	46
6.2 Regarding Future Investigations	49
References	50
Appendix 1: List of the Trade Promotion Officers Interviewed in Vancouver.....	57
Appendix 2: Trade Officers Interviewed and Contacted by Dr. Ilan Vertinsky.....	58
Appendix 3: Outline Used in Structured Interviews of Trade Officers in Vancouver.....	60
Appendix 4: Selected Electronic Malls Currently Maintained on the World Wide Web.....	61
Appendix 5: Selected Databases Applicable to International Business*	62
Appendix 6: Selected WWW Homepages Related to International Trade.....	63
Appendix 7: Electronic Databases Maintained by National Trade Promotion Organizations	64
Appendix 8: Selected Computer-Based Learning Tools for International Trade	66
Appendix 9: Selected Cross-Section of Canadian Trade Promotion Services*	67
Appendix 10: National Telecommunications Indicators (data at January 1, 1993)	69

List of Tables

Table 1: The Internet Addresses of Selected National Trade Promotion Organizations	26
Table 2: Electronic Bulletin Boards of Selected Trade Promotion Organizations	28
Table 3: Summary of DFAIT's Use of IT-Enabled Trade Promotion Services	43

List of Figures

Figure 1: Interrelationship of Forces Impacting on Trade Promotion Organizations	2
Figure 2: World and Canadian Exports 1980-1994	15
Figure 3: Summary of Current and Potential Use of Emerging Information Technologies by Trade Promotion Organizations	35
Figure 4: Simplification of the Information Flows Through Trade Promotion Organizations	46

Chapter 1: Introduction

1.1 Thesis Objective

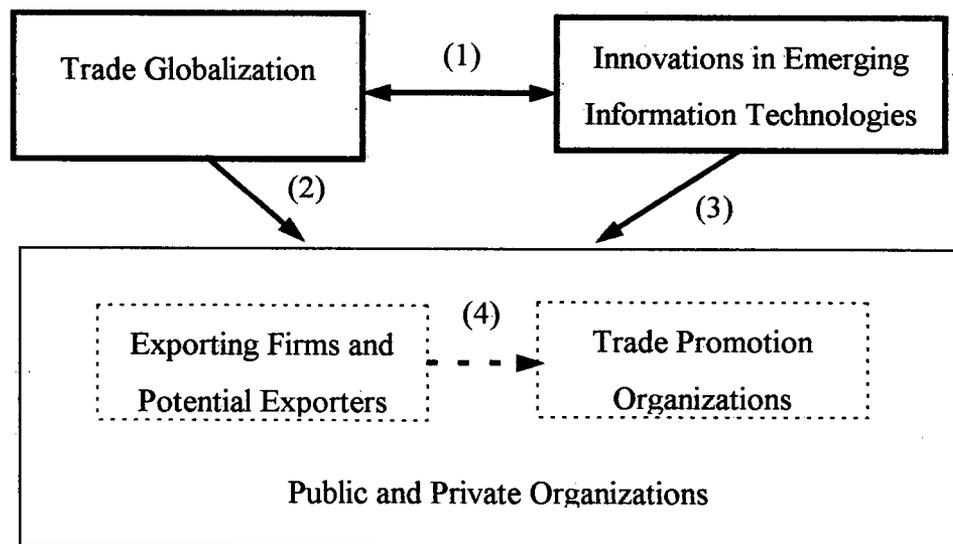
This project was undertaken in response to a request by the Government of Canada's Department of Foreign Affairs and International Trade (DFAIT) to examine and assess the impact of emerging information technology (IT) on international trade promotion. One of DFAIT's roles is that of Canada's national trade promotion organization (TPO), offering trade assistance and counseling to firms across the country.

Many sovereign states operate national TPOs. These organizations typically combine centralized management structures coordinating widely distributed national and international networks of trade offices. Several other types of trade promoters exist, including private consultants, industry associations, chambers of commerce, and international agencies.

Public and private organizations worldwide are rapidly adapting to the multi-faceted changes arising from expanding global trade and accelerating technological innovation. Bradley, Hausman and Nolan (1993) described globalization and technological innovation as the world's "most significant drivers of strategic change." Daser (1994) observed "an irreversible trend toward globalization in today's borderless world economy." IT's profound ability to compress time and distance is of singular importance in international trade, which involves the exchange of goods, services and information through time and space. The accelerating trend towards globalized markets is due in no small part to recent technological advances. Similarly, deregulating markets and more open societies encourage the exchange of ideas and knowledge, thereby contributing to technological progress. This symbiotic relationship between information technology and international trade continues to gain momentum as we approach the 21st century.

Figure 1, below, summarizes many of the issues studied in this project. Line (1) refers to the mutually beneficial relationship between globalized trade and technological innovation described above. Lines (2) and (3) indicate the direct impact of these two trends on trade promoters, their clients and practically all organizations. However, the trade and export assistance needs of firms evolve as they adjust to new market structures and technology-driven business change. TPOs adapt their services to reflect changes in their clientele. Thus, line (4) in Figure 1 symbolizes the indirect impact of globalized markets and technological development on trade promoters as they strive to serve a diverse collection of firms.

Figure 1: Interrelationship of Forces Impacting on Trade Promotion Organizations



Many trade promotion officers perceive emerging IT to be a means of maintaining or improving service quality in the face of contracting resources and the rapidly evolving business environment. In general, the use of emerging IT among TPOs is growing rapidly. Nonetheless, IT adoption among TPOs often lags behind that of comparably-sized private companies.

The objectives of this paper are to

- a) identify and describe emerging IT that are most likely to impact TPOs,
- b) examine the organizations involved in trade promotion,
- c) assess the current use of IT by TPOs and describe how TPOs could benefit from the application of emerging IT, and
- d) discuss DFAIT's use of emerging IT in the Department's capacity as Canada's national TPO.

1.2 A Note on Definitions and Abbreviations

The following abbreviations and definitions are used throughout this paper to maintain simple and consistent notation.

- a) TPO (trade promotion organization): refers to any public or private entity whose primary role is to encourage or enhance trade between nations. While not a standard acronym at the Department of Foreign Affairs and International Trade, many analysts (for example, Jaramillo, 1992) have adopted this notation. A country's national export and trade promoting body will be distinguished as being a national TPO.
- b) IT (information technology): denotes electronically-enabled information processing, communication and telecommunication technologies. Bradley, Hausman and Nolan (1993) describe the rapid fusion of information and telecommunication technologies. As the traditional divisions between these technologies disappear, they can be more easily be referred to using the collective and widely recognized IT acronym. We considered "emerging" to exclude the telephone, telex, manual facsimile transmission and other less recent developments.

- c) SME (small and medium-sized enterprises): This acronym, although extremely subjective, is common throughout trade and industry literature.
- d) DFAIT (The Department of Foreign Affairs and International Trade): DFAIT is the standard acronym used by the Department.
- e) interviewee: refers to the trade promotion officers who contributed to this project. A list of interviewees appears in Appendix 1 and Appendix 2.

1.3 Analysis Process

There were three main phases in the analysis process: a literature search, semi-structured interviews, and an examination of how TPOs could apply emerging IT towards improving their operations. The following sections describe each phase in detail.

1.3.1 Literature Search

The literature search covered the three interrelated subject areas relevant to the project: international trade, international trade promotion, and emerging IT. Numerous academic, business and industry journals report on one or a combination of these three topics. Texts, trade promotion literature and technical periodicals provided many of the ideas and concepts adapted to the specific focus of the project. In addition, several sources of information were obtained using Lexus-Nexus, ABI/Inform and other online databases. The Internet also proved to be a valuable source of information, particularly such search engines as Lycos, Yahoo and Alta Vista. Internet mailing lists, such as Educom, the Global Interact Network List (GINLIST) and InfoSys, provided regular updates on recent developments in IT and international business. In addition, government documents related to trade promotion and IT were sourced electronically via the World Wide Web and electronic bulletin board systems, as well as directly from several TPOs and government agencies.

1.3.2 Interviews

Semi-structured interviews were held with two groups of trade promotion officers to obtain current, first-hand information regarding the operations and IT applications of TPOs. The broad diversity of services, objectives, clientele and IT applications among TPOs precluded the use of a standardized survey instrument. Moreover, a semi-structured interview format enhanced the collection of ad-hoc information unique to each TPO. This was especially useful when soliciting opinions regarding the future applicability of IT to the trade promotion function.

One set of interviews was conducted with the trade officers of several national TPOs stationed in Vancouver B.C. between January and March, 1996. Appendix 1 lists the trade promotion officers stationed in Vancouver who contributed to this phase of the project. The outline used for these interviews appears Appendix 3. These TPOs were chosen because:

- a) they maintain offices in Vancouver, close to the University of British Columbia, and
- b) the diversity of economic development, geographic location and technological sophistication among the countries they represent.

Dr. Ilan Vertinsky carried out the second set of interviews with DFAIT officers in Ottawa, Washington D.C., London, Brussels, Seoul and Stockholm, and with U.S. Department of Commerce trade promoters in Washington. Refer to Appendix 2 for a list of people participating in these interviews, which took place between October 1995 and March 1996.

To confirm the accuracy of our observations, we sent an preliminary draft to the interviewees at DFAIT and Industry Canada. Seven interviewees responded with corrections and comments.

1.3.3 Information Integration

The third phase of the analysis process involved combining the two preceding information streams to assess the likely future effects of emerging IT on trade promoters. Dr. Yair Wand provided considerable assistance in identifying relevant IT and their application to trade promotion.

1.4 Report Organization

This paper is divided into six chapters. Chapter 1 introduces the topics of interest and summarizes the activities involved in the study. Chapter 2 specifies the emerging IT identified as particularly relevant to the services and operations of TPOs. Chapter 3 describes the various types of TPOs, their operating environment and their target clients. We examine the emerging IT currently utilized by TPOs and offer suggestions for future IT implementations in Chapter 4. In Chapter 5 we examine the efforts of DFAIT and other Canadian organizations to promote trade. Finally, Chapter 6 provides the conclusions derived from this project.

This project draws on and attempts to integrate a broad scope of technical, economic and trade issues. To clarify and emphasize important points, Chapters 2 through 5 begin with an overview and end with a summary of the information presented within the chapter. These are intended to link the various threads of information presented into a coherent whole.

Chapter 2: Emerging Information Technologies

2.1 Chapter 2 Overview

One example serves to highlight the magnitude of changes occurring in the field of information technologies. Consider microprocessors, the driving force behind ongoing advances in electronic computing capacities. Since their invention a quarter of a century ago,

microprocessor performance has improved 25,000 times, while over the same period, their cost has dropped by a factor 1000 (after adjusting for inflation) (Patterson, 1995). These figures combine to give an improvement in performance per unit cost of 2.5 billion percent.

This chapter provides brief descriptions of the emerging IT that impact trade promotion. In Chapter 4, we discuss the use of these technologies by trade promoters.

2.2 Emerging IT Important to Trade Promotion

The ability to effectively apply emerging IT to business processes is increasingly important to all organizations. Davidow and Malone (1992) postulated that “incremental differences in companies’ ability to acquire, distribute, store, analyze, and invoke actions based on information,” would determine the “winners and losers in the battle for customers.” Tapscott and Caston (1993) refer to today’s ongoing sea of technological change as the start of the “second era of information technology,” and warn that organizations that fail to adapt risk being left behind. The following collection of emerging IT are those we felt to be most relevant to TPOs.

2.2.1 Telecommunications

Telecommunications, including wireless, satellite and fiber-optic networks, are the bonds that interconnect other IT innovations. The telecommunications industry continues to rapidly expand. Cellular telephone use grows annually by approximately 50 percent in North America and more than 200 percent in large South American markets (Zysman, 1995). Sophisticated communication systems are one of the driving forces behind trade globalization. Daggatt (1995) described how satellite and cellular systems can benefit regions, particularly in developing countries, where wire-based communications are not economically feasible.

2.2.2 The Internet

The Internet's combination of telecommunications and computing technologies help fuel its rapid growth. The number of Internet hosts has grown to over 4 million in 1995 from 23 in 1971 (Baran, 1995). This trend is expected to continue. A recent survey¹ conducted by International Data Corporation estimated the number of Internet users worldwide will rise from approximately 50 million at the end of 1995 to 200 million by the end of 1999. Organizations are taking advantage of possibilities generated by the Internet. E-mail is becoming a standard means of communications in many countries. Other applications of the Internet include the World Wide Web (WWW), electronic marketing and electronic commerce.

2.2.3 Client/Server Computing

Client/server architecture, in which processing is shared between local intelligent workstations and a remote computer, is replacing the mainframe as the dominant computer system paradigm in many situations (Lile, 1993). Client/server systems can seamlessly link mainframes to networked desktop computers. Through an intuitive, icon-based interface, users can access internal and external computers resources without being aware of the location of the systems involved. Scalability is another advantage client/server systems enjoy over mainframes. Servers can be added to and removed from a computer network as the need arises. As well, servers specialized to run databases, printing functions, e-mail and many types of communications systems have been developed to maximize operating efficiencies (Sinha, 1992).

¹ Reported in "Internet '95," *Internet World* (6:11) November 1995, pp. 47-52.

2.2.4 Electronic Document Management

Electronic document management is an important application of technology for organizations that process and distribute information from many sources and in multiple formats. Digital or electronic documents can incorporate not only text, but also charts, diagrams, audio and video images. Sprague (1995) noted that advances in digital image processing, large capacity storage, hypertext, high bandwidth communications, and improved information retrieval techniques were among the technologies enabling advances in electronic documents. They provide a means of storing, searching and accessing unstructured information in a format that is simple to retrieve and manipulate. When combined with intranets (see below), electronic templates can be used to replace such paper documents as employee directories, training manuals, and requisition forms. Interactive forms allow users to add or amend information on an electronic document, which can then be forwarded to subsequent stages in the workflow process.

2.2.5 Intranets

Intranets use Internet standards and applications to simplify access to an organizations' internal databases and other database resources (Cortese, 1996). Intranets allow users to view and manipulate a document regardless of the type of computer it is stored on. This is particularly useful for enterprises maintaining a variety of mainframe, networked and stand-alone computer systems.

2.2.6 Workflow Automation

Workflow refers to "a collection of tasks or actions organized to accomplish a business process" (Georgakopoulos, Hornick and Seth, 1995). Using computer and communication systems, workflows can be automated to electronically schedule and route tasks within an

organization. This shrinks paper flows, improves business process monitoring and control, and enhances customer response efficiency (Greengard, 1994). The experience of several organizations suggests workflow automation is particularly beneficial to large, geographically dispersed operations that must coordinate business activities among their various components.

2.2.7 Groupware

Ellis, Gibbs and Rein (1991) defined groupware as “computer-based systems that support groups of people engaged in a common task (or goal) and that provide an interface to a shared environment.” Typical groupware systems integrate messaging, scheduling, document management, external information sources and workflow design technologies to enable work group communications, collaboration and coordination.

2.2.8 Expert Systems

An expert system is “a computer-based system composed of a user interface, an inference engine and stored expertise. Its purpose is to offer advice or solutions for problems in a particular area” (Holsapple and Whinston, 1987). Some expert systems supply an explanation of how a problem was solved. These systems enable the sharing of a human expert’s knowledge throughout an explanation and provide a means for integrating the expertise of several human specialists.

Expert systems can enhance productivity, augmenting human creativity and imagination by retaining and relating vast arrays of detailed information. Moreover, an expert system’s ability to explain how it arrived at a particular conclusion or solution is often used as a valuable learning tool. For instance, a firm could explore the likely outcomes of various marketing strategies by applying a series of “what-if” scenarios to an expert system.

2.2.9 Distributed Databases

A distributed database is a single, logical database running across interconnected computers in several locations (Martin, DeHayes, Hoffer and Perkins, 1994). They offer several advantages over centralized databases including:

- a) location transparency,
- b) local data control, and
- c) the ability to continue functioning if one location is disabled.

Moreover, allowing local users control over the data they are responsible for can improve data integrity, accelerate response times and reduce communication costs. Distributed databases are an integral component of client/server computing described above.

2.3 Chapter 2 Summary

This chapter briefly described nine emerging ITs we believe to be relevant to trade promotion and trade promotion organizations. The distinctions between some of the technologies listed here are arbitrary and may disappear in the future. For instance, several ITs are considered components of groupware. Some of the emerging IT not included in this report include electronic commerce applications such as electronic data interchange (EDI). We anticipate this technology to be of a growing importance to international trade in the years ahead, but we feel the direct impact of electronic commerce on trade promotion is less certain.

Chapter 3: Trade Promotion Organizations

3.1 Chapter 3 Overview

International accords, including the General Agreement on Trade and Tariffs, the North American Free Trade Agreement and the European Union, serve to liberalize cross-border trade and limit the power of governments to employ tariffs, subsidies and other protectionist trade

policies. Despite these limitations, protectionist measures still constitute significant barriers to trade. Furthermore, imperfections in information flows also constrict trade. Thus, many nations maintain export promotion agencies with two important objectives. The first is to ensure market access by working to remove trade barriers raised by foreign governments. The second is the promotion of trade, mainly by information dissemination and the development of private sector exporting capabilities. In this paper, we concentrate on the second objective.

The aim of Chapter 3 is to describe the different types of TPO and their operating environment. Furthermore, we focus on the justification for and clientele of national TPOs. The remainder of this chapter examines some of the organizational effects of emerging IT faced by TPOs.

3.2 Three Types of Trade Promotion Organization

Three general types of TPO are discernible as trade promoters adapt to rapid changes in client needs, international business and IT. The three types are

- a) niche market service providers,
- b) national trade promotion organizations, and
- c) international trade promoters offering services irrespective of a firm's nationality. Each type is discussed in detail below.

3.2.1 Niche Market Trade Promotion Organizations

Niche-market trade service providers are TPOs that support particular regions or industries and tend to specialize their services to meet the needs of a select set of members or clients. Organizations in this category include private trade consultants, chambers of commerce, industry associations, and regional trade promotion agencies.

Examples of niche-market TPOs are Germany's Chambers of Commerce and BC Trade, British Columbia's provincial TPO, and the Asia Pacific Foundation (APF). Each of the 80 German Chambers of Commerce in 60 countries operate with a high degree of autonomy and adjust services to meet the trade promotion requirements of the local chamber members. BC Trade concentrates on industries important to the provincial economy and offers such specialized services as multimedia marketing expertise that companies can use to develop electronic audio -visual presentations for trade fairs and conferences. Many of the APF's clients are small business executives who frequently travel to Asian countries. The APF established local dial-in connections to its APFNET in most major centres in Asia. This ensures APFNET subscribers can utilize the network's e-mail, Internet access and other services while abroad, avoiding the cost and inconsistent quality of international long distance connections.

3.2.2 National Trade Promotion Organizations

Expanding the share of export markets served by the nation's firms is the objective of most national TPOs. Emerging IT provide national TPOs the opportunity to link their diverse resources into a cohesive network of service elements. Client/server computing, distributed databases and workflow automation are some of the emerging IT that enable national TPOs to integrate the efforts of their internationally dispersed trade officers. Advanced communication networks can deliver the benefits of the personal relationships and experiences developed by these officers to the target firms of each national TPO.

Conklin (1994) highlighted the need for DFAIT to move from its traditional hub-and-spoke structure to a grid architecture. This would entail replacing the uni-dimensional communications structure that links Ottawa to domestic and offshore trade offices with a multi-dimensional grid of information flows among trade promotion offices, other Canadian

and foreign government agencies, and private firms worldwide. Conklin (1994) felt that the growing need for rapid and direct communications would likely lead to network linkages that circumvent the Ottawa hub.

3.2.3 International Trade Promotion Organizations

The third model of TPO are international organizations that operate programs designed to encourage trade among of all nations. These organizations are a relatively recent innovation and often rely on emerging IT. For example, United Nations launched its Trade Point Programme in 1994 to facilitate communications between transacting parties worldwide. Trade Point aims to establish trading centres in all 185 UN member countries, providing database, EDI, video conferencing, online catalogues and other IT-enabled trade promotion services (Phillips, 1994; Radosevich, 1994). Moreover, the United Nations Development Business Office created SCAN-A-BID, an online database to provide access to the World Bank's and International Development Bank's new project approvals, procurement notices and contract awards.

The Business Cooperative Network (BCNet) is another trade promotion initiative that delivers trade support services to companies of several nations. BCNet maintains profiles on thousands of potential business partners in 35 countries worldwide. Originally created by the European Union in 1988, the service has expanded to Canada and several other countries. A searchable database enables firms to seek out potential customers or suppliers. BCNet's network of over 1,100 accredited advisors add personal and professional dimensions of value to firms pursuing foreign markets.²

² see "BCNet: International Partnership," appearing in *Canadian Manager* (20:1) March, 1995, pp. 14-15.

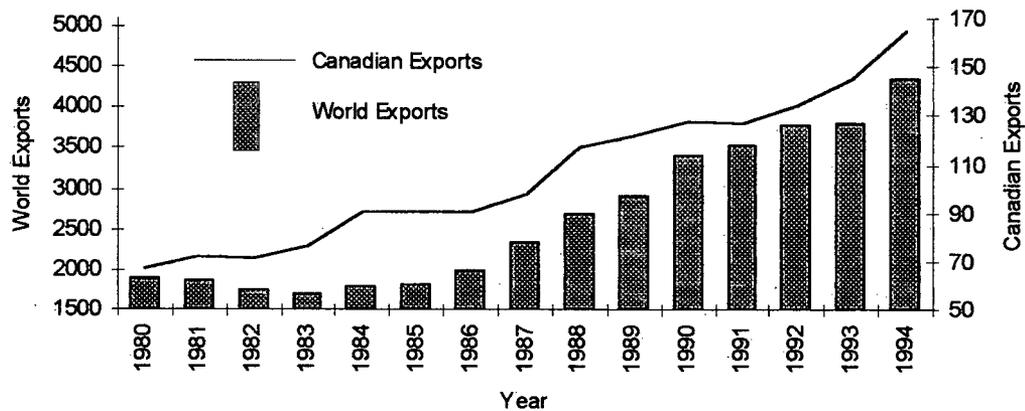
International trade promoters may play an increasingly important role in the future as globalization brings firms in countries without well-established national TPOs into the international marketplace.

3.3 The Operating Environment of Trade Promotion Organizations

Several factors support the recent rising volumes of international trade. The conclusion of the Uruguay round of the General Agreement on Tariffs and Trade (GATT) fueled optimism for the rapid development of integrated, open and global markets. Other factors are leading to rising trade between countries within various geographic regions. For example, the North American Free Trade Agreement aims to build trade relationships among the nations of North, and eventually South America. As well, members of the Association of South-East Asian Nations plan to implement the ASEAN Free Trade Agreement by 2008 (Kelly, Cung and Goddin, 1994). These and other agreements and organizations reinforce the growing importance of international trade to the world economy. Exports are also a vital component of the Canadian economy. Figure 2, below, demonstrates the importance of international trade to Canada and the world by describing the growth in exports between 1980 and 1994.³

³ Source: International Financial Statistics of the International Monetary Fund Vol. XLIII (1995), [1990=100]

Figure 2: World and Canadian Exports 1980-1994 (US\$, billion)



Most national TPOs maintain extensive networks of domestic and international trade offices. These offices operate in a diverse spectrum of business practices, social customs and technological infrastructures. Despite recent steps towards globalization, language and cultural differences continue to play important roles in defining business strategies and trade patterns. Speed of light communications do not guarantee mutual understanding, and personal relationships remain an important aspect of business worldwide. The extensive network of national TPOs is important to companies wishing to expand their business abroad, especially among smaller firms that are unable to support their own international representatives.

Recent efforts by governments to reduce expenditures and control deficits have, in many cases, reduced trade promotion budget allocations. Many TPOs are closing offices, reducing staff and scaling back the variety and depth of services provided. The province of Ontario, for example, shut all its international trade offices in 1994, eliminating an annual expense of \$17 million (Ziedenisberg, 1995). According to one trade official contacted for this study, efforts in the

U.S. Congress may lead to the dismantling of the Department of Commerce, the U.S. national TPO.

3.4 National Trade Promotion Organizations

Most national trade promotion organizations cite market failure as the reason for conducting trade promotion. Griffith (1992) concluded market failure arose when “the ‘laws’ of supply and demand do not automatically produce an optimum outcome.” This typically occurs when market participants possess imperfect or incomplete information. Governments point to the multiplier effects and spin-off benefits of exports as justification for their efforts to reduce the effects of market failure. Market failure is not uniform across all the participants in a nation’s economy. Governments usually direct trade promotion resources towards those firms most severely impaired by market failure.

3.4.1 National TPO Clients

The analysis of TPO services in Chapter 4 requires an understanding of trade promoters’ target clientele. National TPOs lack the resources to support the export activities of all the nation’s companies. A classification system is required to identify the firms most susceptible to the effects of market failure and most likely to benefit from trade promotion assistance. Three dimensions are commonly used by national TPOs when determining the type and level of trade promotion service most appropriate for a particular firm. These include the company’s degree of internationalization, exporting experience and size.

a) Exporting Firm Classification 1: Degree of Internationalization

Firms pass through several stages before evolving into fully multinational corporations. From an initial interest in exporting, these steps can include direct sales, overseas operations and, ultimately, global integration. Another consideration for

TPOs when targeting client is that economic links between enterprises often overreach the political bonds between nations. International strategic alliances and the concept of borderless enterprises can disassociate a company's identity with a single nation. This poses a dilemma for national TPOs, which usually try to support the trade initiatives of domestic enterprises.

b) Exporting Firm Classification 2: Exporting Experience

Some national TPOs provide a series of increasingly sophisticated promotional services as companies become more adept exporters. For example, Austrade, Australia's national TPO, classifies firms as new, emerging or experienced exporters. Seringhaus and Rosson (1990) proposed dividing firms into five groups: non-exporters, first-time exporters, failed exporters, expanding exporters, and continuing exporters.

c) Exporting Firm Classification 3: Size

Most national TPOs offer services based on a firm's size. Small and medium-sized enterprises (SME) are the primary focus of national TPOs because the factors leading to market failure are compounded when SME attempt to enter overseas markets. Research suggests several factors that impede international trade by SME including a lack of knowledge of foreign markets and an inability to assess international market conditions (Czinkota and Johnston, 1983; Edmunds and Sarkis, 1986; Kaynak and Kothari, 1984). Furthermore, SMEs do not enjoy the economies of scale and scope, nor the extensive international networks typical of many large multinational firms.

Based on these three criteria, national TPOs concentrate their resources on assisting SME. Another further justification for supporting SME is their growing importance to the economies

of several developed nations. For instance, Pospisil (1994) noted the steadily declining share of the U.S. economy among the Fortune 500 companies. Leaders of the G-7 member nations also recognize the importance of SME and emerging IT to the global economy. At the February 1995 G-7 Ministerial Conference on the Information Society, participants identified seven pilot projects⁴ designed to address international issues including “the growth and competitiveness of industry and commerce (in particular the development of SME)” (Carbone, 1995). As globalization continues, the number of SME seeking to enter overseas markets can be expected to increase, thereby increasing demand for trade promotion services.

3.5 Organizational Effects of Emerging IT on Trade Promotion Organizations

In general, the effects of emerging IT can be categorized as intra-organizational and inter-organizational. The repercussions of intra-organizational effects are those felt within a single organization, while inter-organizational effects impact on the linkages and relationships between enterprises. A comprehensive analysis of the organizational effects of information technology is beyond the scope of this paper. We focus instead on the implications of adopting emerging IT that are most relevant to TPOs.

3.5.1 Intra-Organizational Effects

Strategies for developing and implementing IT systems must balance the enterprise-wide need for communications and information sharing. An emphasis on information sharing is one function of emerging IT that can be considered a threat by some. For knowledge-intensive service providers like TPOs, information has traditionally been the main source of power. There may be little incentive to share information if trade officers are rewarded for their

⁴The objectives of projects include demonstrating the potential and stimulating the development of the information society (Carbone, 1995).

individual knowledge. Emerging IT can be perceived as a threat to existing expertise, relationships and resource allocations. Employee resistance to IT initiatives is not uncommon. A 1994 report by the Gartner Group⁵ emphasized the human or cultural issues as the “most knotty problems facing organizations that try to implement electronic commerce strategies.” According to Davenport, Eccles and Prusak (1992), “No technology has yet been invented that can convince unwilling managers to share information or even to use it.” “In the most information-oriented companies we studied, people were least likely to share information freely.”

In some instances, emerging IT can increase, rather than streamline the workload of trade promotion officers. The low cost and widespread use of e-mail, facsimiles and other communication technologies facilitate correspondence between firms and TPOs. Trade officers in the field, however, are susceptible to communications overload arising from a growing volume of client inquiries and requests.

Nonetheless, emerging IT can enhance the collaborative power of TPO's geographically dispersed components. Applegate, Cash and Mills (1988) observed that “conventional organizations have historically organized workers together for purposes of communications and coordination. In contrast to physical presence, IT design variables allow for virtual organization structures.” To date, much of the discussion related to virtual organizations has centered on telecommuting (Caldwell and Gambon, 1996). Nonetheless, the concept also applies to interconnected, internationally dispersed individuals and business units. It has been argued that:

⁵The Gartner Group, “Client/Server Computing in the 1990s,” *Information Technology Management Academic Program*, R-001-102, January 6, 1994

Global communication networks and databases increases the mobility of information and knowledge and promote the dispersal of value-adding processes around the globe. Organizations can extract information and knowledge components of their production inputs and business processes, and move them around the world without incurring major time delays or transportation, reproduction, or inventory costs (Jarvenpaa and Ives, 1994).

3.5.2 Inter-Organizational Effects

The demands on IT systems for intra-organizational may be relatively uniform. However, TPOs should also consider the broad range of conditions encountered by trade promotion officers in the field. Officers in developing countries have different communication needs than those in G7 member nations. Centrally dictated systems may fail to address the needs of trade officers working overseas. Failure to coordinate or at least monitor IT system development efforts throughout the organization could lead to isolated pockets of incompatible technologies and duplicated efforts as trade officers repeatedly develop nearly identical systems to meet localized needs.

Two ways Sprague and McNurlin (1993) noted that IT can influence inter-organizational relationships were:

- a) as a means of improving a firm's competitive position relative to its rivals; and
- b) to enable cooperation between two or more organizations towards the attainment of mutual goals.

Since national TPOs do not directly compete with each other or with other organizations, we focus on two aspects of IT's capacity to enable cooperation.

First, TPOs can play a vital role in opening communication channels, providing personal introductions, and representing firms' interests in offshore markets. This creates the foundations for inter-organizational cooperation between companies and that can provide a TPO's clients international market presence, dedicated sales channels and exposure to diverse

business practices. Business partnering with a foreign firm is also a means of circumventing cultural and other non-tariff barriers that might otherwise impede market entry. Tapscott and Caston (1994) described how technology enables firms to develop partnerships with their customers, suppliers, affiliated organizations, and even their competitors. These IT-enabled initiatives range from agreements on communication protocols to the joint formation of autonomous enterprises. Establishing electronic data interchange (EDI) links between an enterprise and its suppliers, for example, can simplify and automate transaction processing. For international trading partners, EDI's predefined data transmission standards reduce the need for translating many business communications, and can thereby reduce errors, misunderstandings and response times.

Second, the benefits of cooperatively-developed IT systems are available to groups of TPOs. For example, combining the knowledge of several trade promoters into a knowledge base could create a trade expert system superior to any of the individual organizations acting on their own behalf.⁶ Cooperation among the various trade promoting agencies sharing the same target clients can ensure that firms receive the most appropriate trade services. Groupware, automatic mailing lists, and other emerging IT can be used to support the communications and information sharing necessary to coordinate trade promotion service delivery.

One effort to harmonize the activities of trade promotion organizations is the U.S. Trade Promotion Coordinating Committee. This committee acts as a comprehensive resource for

⁶ Cooperation is more likely among trade promotion organizations from the same nation. However, cooperation is possible between trade promoters from different countries. The latter requires trade promoters to shed mercantilistic attitudes that see export promotion, rather than trade promotion, as the process that creates national wealth.

U.S. companies seeking information on federal programs that support U.S. exports.⁷ In France, the major national and regional TPOs created the Charte Nationale d'Exportation, which aims to coordinate members' efforts to promote trade.

3.6 Chapter 3 Summary

We observed three general types of trade promoters: niche market service providers, networked national TPO, and international trade promoting agencies. In this paper, we concentrate primarily on national TPOs. International agreements and other factors generating global trade opportunities increase the number of firms seeking to enter foreign markets. National TPOs focus on supporting the trade initiatives of SME, a growing sector of many developed economies. To enhance their international competitiveness, SME require sophisticated trade promotion expertise. The various classifications of firms interested in exporting (see Section 3.4.1), emphasize the need for TPOs to adapt their activities to specific client needs. Rising demands for more advanced services comes as many TPOs face shrinking budgets. Finally, as a prelude to Chapter 4, we noted some of the organizational effects of IT that are especially significant to trade promoters.

Chapter 4: The Use of Emerging Information Technologies by Trade Promotion Organizations

4.1 Chapter 4 Overview

The application of emerging IT by TPOs is the central theme of Chapter 4. TPOs face numerous challenges in delivering trade information and services to a diverse clientele. SME typically possess broad range of business goals, exporting experience and resources devoted to

⁷ From "Export Programs," a pamphlet published by the U.S. Trade Information Center, January 1995.

foreign trade initiatives. To meet the clients' trade promotion needs, TPOs employ emerging IT as communication, dissemination and coordination tools.

4.2 Current Use of Emerging IT by Trade Promotion Organizations

There is a wide range in the degree of adoption of emerging IT among TPOs. For instance, some national TPOs do not use e-mail. Facsimile, telephone and telex remain the primary means of communication for many national TPOs. Approximately half of the national TPOs contacted maintain a presence on the World Wide Web. The applications presented here represent the more sophisticated use of IT among TPOs.

Three categories of emerging IT as used by TPOs are defined here to be

- a) communications: an exchange of information between two or more individuals or organizations,
- b) dissemination: the process of making information available or providing access to information, and
- c) coordination: using IT to monitor, manage or control a TPO's processes and functions

Using these three categories, we discuss the current use of IT by TPOs (Section 4.2) and suggest other possible applications (Section 4.3).

4.2.1 Current Use of IT for Communications

Rapid, efficient and reliable communications, both within the organization and with external enterprises, are essential to TPOs. E-mail's ability to transmit and receive messages non-interactively is an advantage to national TPOs that maintain offices in several time zones and must respond to inquiries from firms worldwide. Private communication lines provide added measures of security, while e-mail sent via public networks such as the Internet provides low-cost messaging both internally and with foreign and domestic companies.

Automated communications are becoming increasingly important to TPOs. For example, trade officers at the Japan External Trade Relations Organization (JETRO) receive articles and news items published electronically by Lexus-Nexus. JETRO receives daily dispatches based on a predefined query that searches the Lexus-Nexus databases for trade-related information. Automated search engines such as this are likely to become vital for trade promotion officers to manage the growing volume of available information.

4.2.2 Current Use of Emerging IT for Dissemination

To date, the impact of emerging IT on trade promoters has been strongest in the area of information dissemination. Instead of responding to clients' requests for trade-related information, TPOs use IT to make a growing volume trade-related information available to firms. This enables TPO clients to collect trade-related information that is specific to a firm's individual needs. Dissemination assists TPOs in supporting a large and diverse clientele by providing information in a process that does not require the human intervention of trade officers. Through the use of emerging IT, a TPO can make new and revised information available inexpensively and instantaneously to all its clients. This is a distinct advantage over traditional paper-based means of information distribution. The following is a description of several emerging ITs utilized by TPOs to disseminate trade information.

a) The World Wide Web (WWW)

Trade promoters are becoming increasingly aware of the power of the WWW to collect and distribute information. The WWW presents users with a variety of media formats including text, audio, graphics and video; creating an intuitive window to a trade promoter's diverse computer resources such as databases, document archives and communication networks. Many national TPOs that do not yet maintain a WWW

presence are in various stages of developing a site. Table 1 lists the Universal Resource Locator (URL) address of the homepage of several national TPOs. Other WWW sites related to international trade and trade promotion appear in Appendix 6.

Table 1: The Internet Addresses of Selected National Trade Promotion Organizations

National Trade Promotion Organization	World Wide Web Address
Department of Foreign Affairs and International Trade (Canada)	www.dfait-maeci.gc.ca
Japan External Trade Organization	www.jetro.go.jp
CHILE TRADE	virginia.beachnet.org/chiletrade/
Austrade (Australia)	www.austrade.gov.au
Department of Commerce (USA)	www.doc.gov/
China External Trade Development Council (CERTA) (Taiwan)	tptaiwan.org.tw
The Ministry of External Relations (Brazil)	www.dpg.dct.mre.br/index-i.htm
Tradenz (New Zealand)	www.mft.govt.nz/Oversea/Service/trade.htm
Bancomext (Mexico)	mexico.businessline.gob.mx/infotec/index_i.html
Singapore Trade Development Board	www.tdb.gov.sg

One of the most potent functions of WWW sites is their ability to provide links to a vast variety of information sources at little or no cost. Trade promoters are able to enhance the usefulness of their WWW sites simply by including links to relevant industry associations, online databases, affiliated TPOs, and other resources.

b) Electronic Databases

Trade promoters see providing their clients direct access to trade-related databases and knowledge banks as the best way to meet rising demand for information. These databases can retain statistical data, export regulations, trade policy documents, industry and region reports, and other information of value to firms interested in entering offshore markets. One of the most widely-used trade databases is the National Trade Data Bank (NTDB). The NTDB is a compilation of trade and international business information collected from 17 U.S. government agencies.⁸ Despite monthly updates on CD-ROM disks, the NTDB is subject to the rapid obsolescence of trade-related information that afflicts most trade data bases. Appendix 7 describes several trade databases developed by national TPOs.

One specialized form of database developed by national trade promotion organizations is a directory of the nation's exporting firms. Germany's Chambers of Commerce, for example, publish membership directories in both paper and CD-ROM formats to satisfy divergent member needs. Exporter directories can suffer from out-dated information, especially if revisions are only published annually. Moreover, trade promoters are often unaware of changes in the condition of companies that make the information recorded in exporter directories obsolete or inaccurate.

c) Electronic Bulletin Boards

Besides detailing upcoming trade fairs, current trade opportunities and various trade statistics, electronic bulletin boards offer trade promoters and exporting firms a

⁸ from *Export Programs*, a pamphlet published by the U.S. Trade Information Center, January 1995.

forum for discussing trade and trade promotion. These discussions provide companies current information on conditions in overseas markets from their exporting peers and trade promotion officers in the field. Currently active trade bulletin boards include those shown in Table 2, below.

Table 2: Electronic Bulletin Boards of Selected Trade Promotion Organizations

National Trade Promotion Organization	Electronic Bulletin Board
DFAIT (Canada)	InfoCentre Bulletin Board (IBB) - used by exporters and DFAIT trade officers for electronic discussions of trade issues and as a document access point - DFAIT plans to eventually replace the IBB with services on its WWW site
Tradenz (New Zealand)	MarketLink: - a messaging and discussion forum intended primarily for New Zealand firms seeking opportunities in Australia
U.S. Department of Commerce	Economic Bulletin Board: - fee-based service contains trade leads and statistical releases from U.S. government agencies including the Bureau of Economic Analysis, The Bureau of Labor statistics and the Federal Reserve Board
China External Trade Development Council (Taiwan)	- in addition to trade information, exporters able to post advertisements for a nominal fee

d) Fax-Back Systems

Fax-back systems are an enhancement of automated telephone answering technology. The service enables users to select documents from a series of menus, using the telephone keypad to indicate preferred options. Based on the user's selections, these systems immediately transmit the requested document by facsimile. This is the only emerging IT discussed here that does not require users to access a

computer. The national TPOs of Canada, Finland, Mexico and the United Kingdom are among the many agencies operating this type of service.

4.2.3 Current Use of Emerging IT for Coordination

TPOs can benefit from the power of emerging IT to coordinate the organization's activities. Given recent gains in the ability to generate, communicate and disseminate information, organizations require sophisticated coordination measures to monitor, capture and benefit from information flows. Coordination is crucial for national TPOs, which usually maintain extensive domestic and international networks of trade offices.

One IT application to facilitate trade is TradeNet, Singapore's computerized system linking over 20 government agencies to provide a single point of access for traders, shipping agents and freight forwarders⁹. TradeNet enabled Singapore to reduce the time required for customs approval from days to minutes (Konsynski and McFarlan, 1990).

Using IT as a means of coordination is expected to be increasingly important to trade promoters. For example, Austrade is currently developing a client management information system to track each client. The system will keep Austrade officers worldwide informed of each clients' exporting experiences and capabilities, enabling Austrade to tailor its services to the needs of individual clients.

4.3 Potential Use of Emerging IT by Trade Promotion Organizations

Section 4.3 proposes several ways emerging IT can enhance the delivery of trade promotion services and the functioning of TPOs. To maintain a consistent format with Section

⁹ Singapore Trade Development Board Corporate Brochure (http://www.tdb.gov.sg/publictn/sbroch/sb_broch.html)

4.2, we grouped the following recommendations by their relevance to trade promoters' need to communicate, disseminate and coordinate.

4.3.1 Suggested Use of Emerging IT for Communications

a) The World Wide Web

Interactive fields on WWW pages allow users to submit information to the site's sponsor. This functionality is currently used to submit search engine queries and to conduct electronic commerce on the WWW. TPOs can use this technology as an automated inquiry filter.

TPOs receive inquiries via several media including telephone, the post, facsimile and e-mail. The lack of a standard inquiry format makes it difficult to sort, record and share the details of an inquiry. Critical information is often omitted, forcing TPO officers to collect supplemental information themselves or respond without sufficient background knowledge. WWW inquiry documents can be designed so that they would be transmitted to the TPO only if certain key fields were properly entered. Text files, images and other media data could be digitally attached to the inquiry or forwarded by other means with a suitable reference to the electronic document.

Besides enhancing inquiry processing, TPOs could use the inquiries submitted as WWW documents to build searchable databases. Companies could access these databases to learn from the inquiries of other exporting firms.

4.3.2 Suggested Use of Emerging IT for Dissemination

a) Virtual Trade Fairs on the World Wide Web

Using the WWW as a marketing tool enables the smallest of firms to inexpensively reach potential trading partners worldwide. However, these advantages contain an

element of risk since examining a WWW homepage gives no indication of the sponsoring company's trustworthiness, business ethics or financial stability. National TPOs can play a crucial role in establishing the credibility of its clients through the use of the WWW.

A document on the WWW can contain an electronic link to any other document on the Web. National TPOs, enjoying many of the privileges and official status of a country's diplomatic corps, can apply this respectability to its presence on the WWW. On its own WWW site, the trade promoter could include links to the home pages of firms that meet predefined standards for export readiness and international business acumen. This "seal of approval" would provide foreign firms a measure of security and stability to foreign firms using the WWW to search for new business partners and opportunities.

This concept can be extended to the creation of virtual trade fairs on the WWW. These trade fairs could include product descriptions and links to participating companies in a format resembling the electronic malls already on the Web (see Appendix 4). Like conventional trade fairs, a WWW site sponsored by a national trade promoter could specialize in a particular industries or region. Periodically changing the theme of these virtual trade fairs would encourage firms to visit the trade promoter's WWW site on a regular basis.

b) Computerized Exporter Training Systems

Bringing client firms to export readiness is an important role for TPOs. However, SME, the firms targeted by many national TPOs, frequently lack international trade skills and awareness. Computer training systems can provide challenges and

experiences designed to familiarize firms with the issues involved in entering foreign markets. TPOs could also adopt these system to train their own trade officers. Appendix 8 offers a description of three computer-based exporter training programs.

c) Electronic Bidding Systems

Electronic bidding systems are a form of electronic bulletin board that is normally restricted to the participants of a single industry or sector. They provide a forum where buyers and sellers can interact electronically. This can improve information diffusion throughout an industry and alleviate the effects of market failure. For example, the national trade promoter in a country with a substantial domestic automobile parts industry could establish a system where domestic and foreign vehicle manufacturers could post invitations to tender. Interested firms could then submit bids. Such systems would provide firms the opportunity to capture international business and build overseas trade networks.

One example of an electronic bidding system used in a domestic market is RESFOR. RESFOR is a network designed to provide small Italian business with information on large contractors that are seeking subcontractors. In addition to listing available contracts, this system contains detailed descriptions of subscriber companies.

d) Online Exporter Directories

Inaccurate and outdated information are common complaints of the exporter directories and other databases currently produced by TPOs. Many electronic directories distributed on CD-ROM and floppy disk are only revised annually. Another option is for TPOs to maintain online directories and to allow firms to create and update their own listings in the directory. Firms that did not maintain accurate their

own corporate data or failed to respond to trade leads supplied by the trade promoter could be removed from the directory.

4.3.3 Suggested Use of Emerging IT for Coordination

a) The Potential of Workflow Automation

Two of several TPO activities suitable for workflow automation systems are inquiry processing and trade lead processing.

The trade inquiry processing application of workflow automation could begin with the WWW electronic inquiry document described in section 4.3.1, above. Based on the contents of certain key fields in this document, inquiries sent to TPOs could be automatically routed to specific personnel based on each trade officer's expertise, current workload or other parameters. A workflow automation system could direct the inquiry through each stage of the response process and coordinate collaborative responses by several trade promotion officers.

One of the primary functions of trade promotion officers in the field is to collect trade leads. These business opportunities often require a rapid response from suitable firms. Applied to this process, a workflow automation system could direct trade leads through the TPO and out to firms likely to be able to respond. The system could also monitor the volume of trade leads generated, the response rate of client firms and some measure of the value of each lead.

b) Client Information Management Systems

Many interviewees stressed the importance of assisting firms to develop through the various levels of exporter sophistication (see Section 3.4.1). Keeping track of the services provided to and results achieved by individual clients will be an necessary

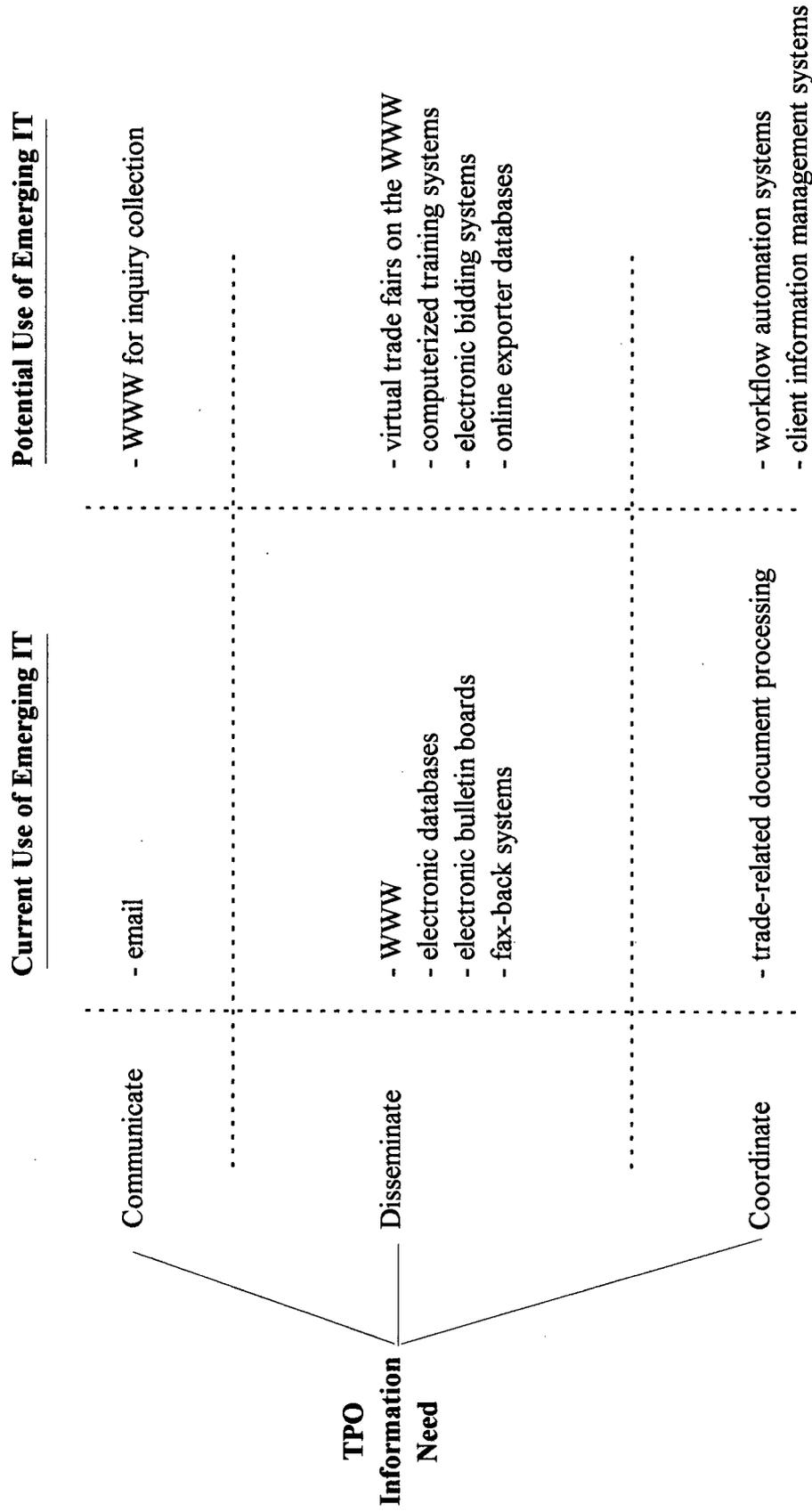
function of TPOs as they strive to tailor services to individual client needs. Furthermore, disseminating detailed information on each client throughout the organization will also enhance consistent service delivery. We envision client information management to be a application of groupware that can enhance collaboration between geographically dispersed trade promotion officers. As well, these systems will need to retain and organize information about a TPO's clients. Austrade is currently developing a client information management system that will include a variety of communication and client information tracking functions.

4.4 Chapter 4 Summary

This chapter described the use of emerging IT by TPOs and provided ideas for further applications. Figure 3, below, graphically illustrates the main points considered in relation to the needs of trade promoters.

In providing trade promotion services, TPOs use many resources and technologies that were not included in the preceding discussion. International public and private networks, for example, are the infrastructure utilized by many e-mail, telephone and other communications technologies. Furthermore, there are many electronic databases and WWW sites that TPOs use to source the information provided to clients. Appendix 5 describes some of the database resources that store trade-related information. Appendix 6 contains a cross-section of sites on the WWW associated with international business.

Figure 3: Summary of Current and Potential Use of Emerging IT by Trade Promotion Organizations



Chapter 5: Case Study: The Department of Foreign Affairs and International Trade

5.1 Chapter 5 Overview

Chapter 5 examines the impact of IT on Canada's national TPO, the Department of Foreign Affairs and International Trade. In addition to a description of DFAIT's role in relation to other Canadian trade promoters, this chapter examines the use of emerging IT by DFAIT, the Department's delivery of trade promotion services, and some constraints to the use of IT specific to DFAIT. Considering the importance of exports to the nation's economy, effective trade promotion is vital to ensuring Canada's prosperity.¹⁰

5.2 Canadian Trade Promoters

There are several organizations dedicated to assisting Canadian firms compete in international markets. Rosson (1994) estimated that 18 federal ministries and departments are involved in trade and investment. Most Canadian provincial governments include internationalization among their top priorities and several provinces operate trade promotion offices domestically and overseas. Private sector trade promotion service providers, as well as various chambers of commerce and industry associations also support exporting firms. Appendix 9 gives a summary of some of the organizations providing trade promotion services to Canadian firms.

Critics often question the overlap in services and confusion among companies seeking export assistance caused by the number and variety of Canadian trade promoters (Rosson, 1994). However, provincial trade promoters are generally perceived to be more sensitive to the needs of individual firms and better able to specialize exporter training programs to the needs of local

¹⁰ Exports of goods and services accounted for an estimated 36% of total private sector output in Canada in 1995 (Canadian International Business Strategy, '96-'97 Strategic Overview).

companies. Federal agencies point to their long tradition of trade promotion, an extensive international network, and nation-wide service availability as justifications for their trade promotion programs. In an attempt to rationalize the nation's various trade promotion services, the federal government is currently developing strategies to coordinate the many layers of services and programs available. The federal and provincial governments have recently initialed several memorandums of understanding that aim to improve cooperation on trade promotion issues.

The federal government launched the Canadian International Business Strategy (CIBS) to coordinate the trade promotion activities of the federal government, provincial trade promoters and other export service organizations. In addition to an overall vision of encouraging exports, CIBS also describes industry-specific and regional trade promotion strategies. A recent DFAIT publication¹¹ described CIBS as "a key element of the federal government's commitment to a 'Team Canada' partnership with the private sector and the provinces - a partnership based on developing winning strategies that generate new opportunities for Canadian businesses."¹² CIBS relies on the World Wide Web and other emerging IT for communications and for organizing activities among the program's participants.

5.3 Trade Promotion by the Federal Government

Two federal government agencies, Industry Canada (IC) and DFAIT, are the most active promoters of Canadian goods, services and interests. IC concentrates on enhancing the overall competitive performance of Canadian firms, particularly SME, in both domestic and overseas markets. DFAIT carries out Canada's international trade, economic and political relations policies, in addition to its function of working to increase Canada's share of export markets.

¹¹ DFAIT's trade journal, *CanadExport*, Vol. 14, No. 3, February 19, 1996, pp. 1, 7.

¹² <http://www.dfait-maeci.gc.ca/english/trade/cibs/english/cibs.htm>

Conducting both trade promotion and international policy activities has an impact on DFAIT's use of emerging IT. Policy officers' primary concern is for the security and integrity of internal communications, often at the expense of external connectivity and user convenience. SIGNET, the Department's internal network, has only limited connectivity to external networks. This means trade missions must maintain separate machines to connect to many Internet functions such as the World Wide Web. Besides the inconvenience of having to use different computer hardware, purchasing machines dedicated to external communications is considered an unnecessary expense by some system managers. Many DFAIT trade officers we contacted were also dissatisfied with SIGNET's inability to handle large documents and the system's slow transmission speed.

Canada's federal government delivers most trade promotion services through two vehicles, International Trade Centres (ITC) and the Trade Commissioner Service (TCS). ITC operate in major cities throughout Canada, while the TCS maintains trade representatives in over 100 Canadian government missions worldwide. Trade commissions abroad are primarily staffed by DFAIT officers. Both DFAIT and IC officers deliver promotion services at the ITC. Emerging IT can play a role in supporting the ITC and other cooperative initiatives between DFAIT and IC. However, the two agencies do not appear to be coordinating their use of emerging IT. For example, IC recently launched an internal groupware application. The system enhances the collaborative efforts of geographically remote trade officers and provides a sophisticated interface to several external news and information sources. DFAIT, however, has not adopted this system. This is likely to lead to compatibility and information-sharing difficulties between DFAIT and IC.

A third agency staffed with both DFAIT and IC officers is the International Business Opportunities Centre (IBOC). Based in Ottawa, IBOC acts as a centralized link between TCS

officers overseas and Canadian firms. IBOC processes approximately 400 trade leads each month, identifying and contacting Canadian firms suitable for responding to incoming trade opportunities. By processing trade inquiries closer to Canadian firms, IBOC's goal is to enable TCS officers overseas to spend more time generating business leads. A complementary system to pre-process inquiries from Canadian firms might also be useful. DFAIT officers stationed overseas estimated that at least 75 percent of their time was spent responding to inquiries, primarily from Canadian firms. Rosson (1994) cited work overload as a key factor impinging on the effectiveness of the TCS.

IBOC makes extensive use of emerging IT. The agency uses several databases developed by DFAIT, industry associations and other organizations to identify firms in Canada likely to be able to respond to business leads. E-mail communications within DFAIT and beyond provide a rapid response to international business opportunities. IBOC is also increasing its use of the Internet and electronic case management tools to process a growing number of trade leads.

Both DFAIT and IC focus their promotional services towards Canada's small and medium-sized enterprises. SME are perceived to be important engines of economic growth in Canada. For example, firms with less than 50 employees generated over 280,000 new jobs in the 12 months ended March 1995.¹³ Meeting the trade promotion needs of this diverse group of companies places an increasing strain on DFAIT's limited resources.

5.4 DFAIT's Current Use of IT

DFAIT is considered a world leader in the use of emerging IT to promote international trade. The Department utilizes a wide range of IT in support of its internal operations and its

¹³ <http://www.dfait-maeci.gc.ca/english/trade/cibs/english/cibs.htm>

delivery of trade promotion services. The following paragraphs outline DFAIT's emerging IT applications at the time of this project. Table 3, below, summarizes these systems. Not included are the many online databases, communications systems and other IT DFAIT accesses in providing trade promotion services and pertinent information to Canadian firms.

All of the systems described here could be classified as information dissemination tools, one of the three categories of IT applications defined in Chapter 4. Most of these systems can be accessed by firms and organizations outside DFAIT. However, access to the WIN Exports system (see below) is limited to DFAIT staff.

5.4.1 WIN Exports

The WIN Exports database contains information on over 23,000 Canadian firms interested in exporting.¹⁴ WIN Exports is used by DFAIT officers in Canada and abroad when

- a) searching for suitable firms to pursue trade leads,
- b) responding to requests from foreign firms for Canadian business partners,
- c) generating mail merges, faxes and mailing lists, and
- d) recording activities performed against individual company files

Several officers from other national TPOs expressed admiration for the system. Firms can obtain a WIN Export registration form through DFAIT's WWW site and the InfoCentre Bulletin Board. Alternatively, each Canadian firm that contacts a DFAIT mission is registered in WIN Exports by DFAIT staff if no record for the firm exists. This multiple-registration system improves flexibility, but also increases the likelihood of multiple entries of the same company. At present, an online function enabling firms to update their own records is not

¹⁴ From *Canadian Trade Facts*, published by the Department of Foreign Affairs and International Trade, 1994

available. Through WIN Exports' ability to record services performed for individual companies, DFAIT could use this system to coordinate its trade promotion activities. However, interviewees indicated that functionality is not used consistently throughout the Department. Outdated information was one of the problems the users WIN Exports described.

Other comments described the system as:

- a) difficult to load and a source of system crashes on some workstations
- b) awkward to use with inflexible search functions, and
- c) lacking messaging and tracking functions

5.4.2 The DFAIT World Wide Web Site

Launched in July, 1995, the Department's site on the WWW offers an intuitive interface to trade-related information. The site also provides access to the Infocentre Bulletin Board archive of over 2,000 DFAIT documents pertaining to overseas markets, export opportunities, export-assistance programs, and other trade-related topics.

DFAIT also maintains a presence on the WWW through sites operated by several trade missions and Canadian embassies. The main purpose of these sites is to make available to Canadian firms information on local and regional markets and industries. Moreover, these sites provide information to overseas firms on Canadian products and services. Table 3, below, includes a listing of currently active DFAIT WWW sites. Each site contains links to other DFAIT sites and the sites of other organizations.

5.4.3 InfoCentre Bulletin Board (IBB)

The IBB is an electronic bulletin board and database accessible via a modem and personal computer. It contains a document archive similar to what is available through DFAIT's WWW

site, as well as other resources of interest to exporters. The Department plans to gradually eliminate the IBB and provide most of its information services through WWW sites.

5.4.4 CanadExport

This bi-monthly publication contains trade news, business opportunities and other information of interest to Canadian firms. In February, 1996, the Department launched e-mail, electronic bulletin board and WWW versions of CanadExport. By reducing this publication's delivery time, DFAIT hopes to provide more timely and relevant information. The Department is ahead of many other national TPOs in providing electronic versions of its publications. Most trade promoters, including DFAIT, produce an extensive range of printed materials on marketing good and services abroad.

5.4.5 FaxLink¹⁵

FaxLink uses an automated response system to deliver a broad range of documents related to trade and foreign policy. The system enables firms interested in exporting to receive information 24 hours a day.

¹⁵ Tel: (613) 944-4500

Table 3: A Summary of DFAIT's Use of IT-Enabled Trade Promotion Services

Trade Promotion System	Information Technology	Description
WIN Exports	electronic database	store and search Canadian exporters
DFAIT WWW Sites	Internet	provide public access to trade-related documents, news items and statistics
	<u>DFAIT Mission</u>	<u>WWW Site Address</u>
	Detroit	www.bizserve.com/canadian-detroit
	Madrid	www.jrnet.com/canada/
	Milan	www.Agora.stm.it/canada/homepage.htm
	New York	www.canada-ny.org
	San Diego	www.cts.com/~cdntrade
	San Jose	www.canada-trade-sanjose.org
	Tokyo	www.dfait-maeci.gc.ca/english/geo/japan/english/offices/tokyo/menu.htm
	Washington	www.cdnemb-washdc.org
InfoCentre Bulletin Board	electronic bulletin board and database	provide public access to trade-related documents, news items and statistics
CanadExport	trade journal, now available in electronic formats	trade leads and opportunities and other topics important to exporters
FaxLink	automated fax-back system	over 2,000 trade-related documents available on demand

5.5 Constraints to the Use of Emerging IT at DFAIT

This section examines the budgetary and operational constraints confronting DFAIT's use of emerging IT. These factors influence not only the Department's current systems, but also the development and implementation of future systems. The organizational constraints related to emerging IT and TPOs in general were presented in Section 3.5.

5.5.1 DFAIT's Budgetary Constraints

Efforts by the Canadian government to reduce expenditures has contracted the DFAIT budget allocations. The federal government's 1996-97 Main Estimates listed DFAIT's international trade development budget as \$60,711 thousand, 3.6% lower than the previous period. The Main Estimates also described ongoing changes at DFAIT aimed at improving efficiency that include:

- a) restructuring and downsizing the trade development and trade and economic policy functions, for example, by targeting trade development assistance to small- and medium-sized firms and by leveraging limited government resources through increased cost-sharing by the private sector, and
- b) increasing the partnership between federal departments and agencies involved in international business development efforts, other levels of government and the private sector.

5.5.2 DFAIT's Operational Constraints

DFAIT trade officers operate in over 100 locations around the world. Besides the challenges this poses to maintaining efficient communications, DFAIT officers in the field encounter a broad spectrum of technological sophistication, business customs and cultural norms. Differences related to IT can be as minor as the relatively low acceptance of voice mail as a business tool in Europe compared to North America. More complex issues include differences in technological infrastructures. For instance, a recent survey by the Panos Institute found that 70 percent of the computers connected to the Internet were in the United States, but less than 10 African countries maintained Internet links (John, 1995). The national telecommunications statistics in Appendix 10 provide a glimpse of the disparities in technological development among several Pacific Rim nations active in foreign trade.

DFAIT must consider the diverse needs of its officers abroad when implementing any new systems. For example, comments by DFAIT interviewees stationed overseas regarding current

IT systems ranged from “insufficient to meet needs” to “underutilized and unnecessary.” Further, the range of IT-related skills among trade officers poses a challenge to implementing organization-wide systems. Inconsistent skills can also affect a trade officer’s ability to adapt to a new posting when transferring to a mission that relies on IT.

5.6 Chapter 5 Summary

This chapter looked at several aspects of Canada’s Department of Foreign Affairs and International Trade that relate to trade promotion and emerging IT. As Canada’s national TPO, DFAIT is the only organization capable of providing export assistance to firms across the country. DFAIT devotes considerable resources to coordinating the trade promotion efforts of other federal, provincial and non-governmental agencies. Interviewees within DFAIT and of other national TPOs acknowledged the Department to be a leader among TPOs in the application of emerging IT. Specific recommendations for DFAIT regarding the adoption of emerging IT is integrated into the concluding discussion of Chapter 6.

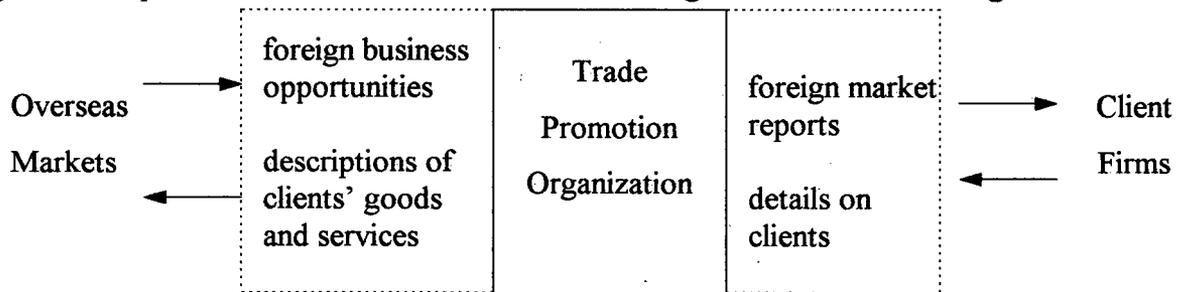
Chapter 6: Conclusions

The preceding chapters sought to examine the current use of emerging IT among TPOs, particularly national TPOs, and to assess likely impacts of IT on these organizations. Our investigation involved literature searches into three distinct subjects: international trade, international trade promotion and emerging information technologies. We also conducted semi-structured interviews with trade officers of several national TPOs stationed in Canada and abroad. Particular emphasis was given to studying the trade promotion activities and corresponding IT applications of DFAIT, Canada’s national TPO. In the remainder of Chapter 6, we discuss the conclusions derived from our study.

6.1 The TPO as an Information Conduit

Basically, TPOs act as two-way information conduits. One end of this conduit works to gather and distribute information in markets worldwide. The other disperses and collects information to and from the TPO's client firms. Typical types of information flowing through the TPO conduit are shown in Figure 4, below.

Figure 4: Simplification of the Information Flows Through Trade Promotion Organizations



The two ends of this information conduit can be a single individual or a large international collection of trade promotion offices. We distinguished three general types of TPO, based primarily on their target clientele. These included:

- niche-market TPOs supporting the crossborder trade efforts of a particular industry or region,
- national TPOs that are in the process of becoming international networked organizations as described by Jarvenpaa and Ives (1994), and
- international TPOs providing services to the firms of many different countries.

Most of the TPOs encountered focused on assisting the trade initiatives of small and medium-sized enterprises (SME). This diverse group of firms represents a growing portion of the economy in Canada and other economically-developed nations. Nonetheless, SME are often

perceived to lack the skills, experience and resources needed to effectively compete in offshore markets.

We observed that the use of emerging IT did not vary greatly among these three groups. Presently, TPOs apply emerging IT at various stages in the information conduit of Figure 4, including:

- a) communications both within and beyond the organization,
- b) disseminating information or make information available,
- c) coordinating internal activities and processes involving other organizations.

For most TPOs, these three general applications represent a continuum of IT sophistication ranging from e-mail communications to world wide web sites to client information management systems that track the services provided and other information related to each of a TPO's clients. Only a few national TPOs have developed systems that qualify for the last category. Before adopting new technologies in an effort to reach higher levels of IT applications, TPOs can seek to maximize the benefits derived from existing systems. For example, DFAIT could make the WIN Export system available through the Department's WWW site. This would enable foreign firms to conduct their own searches for Canadian suppliers and allow Canadian firms to seek companies with similar interests and export goals.

Future IT applications of many TPOs will probably move towards the third level of IT sophistication and beyond. Specifically, the power of emerging IT to enhance the collaborative power of individuals, groups and organizations will become important. Collaboration will be important for national TPOs such as DFAIT that already work to coordinate a broad assortment of federal, provincial and industry-affiliated trade promoters. Taking advantage of the opportunities generated by a networked structure will allow some national TPOs to improve the

collaborative efforts of geographically-dispersed trade officers. Advances supporting these developments include the blending of such technologies as groupware and intranets (Radosevich, 1996) and the ability to access expert systems through simple Internet browsers (Eriksson, 1996). Constraints to implementing information systems will continue to affect the adoption of emerging IT by trade promoters. For national TPOs, these constraints include a large, decentralized and globalized organization, limited budgets and a workforce that may lack the time and inclination to adopt emerging IT.

There are other aspects of emerging IT that are likely to impact TPOs in the future. The lack of technological skills and resources experienced by some SME's can be a disadvantage when trying to enter overseas markets. By maintaining pools of expertise, TPOs can provide these firms with information and training on foreign technological and communications standards, multimedia marketing, international networking and other aspects of emerging IT related to international trade. Furthermore, client information tracking systems can be adapted by TPOs to monitor the services provided to individual clients, assess the costs incurred, and charge clients based on a predefined cost-sharing or cost-recovery schedule.

The timeliness and accuracy of trade-related information are the primary concerns of firms seeking trade service assistance from TPOs. Some agencies consider the speed and efficiency of some technologies as a viable replacement for trade promotion services that were traditionally provided by trade officers. There are cases where emerging IT is used as a replacement to a TPO's network of trade promotion professionals. The Ontario government, for example, developed the Ontario Investment Service as a replacement for some of the functions previously conducted by the province's overseas network after the province eliminated its overseas trade missions. However, it must be emphasized that most interviewees felt that technology could not

replace the advantages provided by the local presence of trade officers in the field. Personal contact will likely remain as important an aspect of international trade promotion as it is of international trade (Landau, 1994).

6.2 Regarding Future Investigations

The rapid pace of technological change frequently mentioned in this report leads us to a final comment for future researchers. This project tried assess the impact of emerging IT on international trade promotion at a single point in time. However, during the course of our investigations, at least two of the organizations mentioned here launched new information systems. Both systems, TradeBlazer from Austrade and Strategis from Industry Canada, rely on the WWW and other technologies. Our one suggestion for further study would be a periodic examination of several TPOs. This would provide indications as to the similarities in IT adoption and rate of IT adoption among national TPOs, and could be compared to similar observations for countries as a whole.

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Appendix 1: List of the Trade Promotion Officers Interviewed in Vancouver

Mr. Fernando Diaz Mendez
Trade Commissioner
Trade Commission of Mexico
Vancouver, Canada

Mr. Jeff Conaster
British Columbia Trade Development
Corporation
Vancouver, Canada

Mr. Kraig Short
Trade Officer
Industry Canada
International Trade Centre
Vancouver, Canada

Mr. Thomas W. Felber
Manager, Western Canada
Canadian German Chamber of Industry and
Commerce Inc.
Vancouver, Canada

Mr. Wes Robertson
Director, Information Systems
Asia Pacific Foundation of Canada
Vancouver, Canada

Ms. Jere Dabbs
Consul (Trade)
Consulate General of the United States of
America
Vancouver, Canada

Mr. Dennis Biggs
Consul General
Consulate General of Chile
Vancouver, Canada

Mr. Mark Reder
Consulate General of the United Kingdom
Vancouver, Canada

Mr. Kevin Lamb
Manager
Austrade
Australian Consulate
Vancouver, Canada

Ms. Gayle Oyama
Japan External Trade Organization
Vancouver, Canada

Mr. Michel-Edouard Connen
Vice-Consul and Trade Commissioner
Consulate General of France
Vancouver, Canada

Mr. Mark Robins
Administration and Marketing Manager
New Zealand Consulate General
Vancouver, Canada

Mr. Rick McElrea
Manager and Team Leader
International Business Opportunities Centre
Ottawa, Canada

Appendix 2: Trade Officers Interviewed and Contacted by Dr. Ilan Vertinsky

Ottawa:
Anne Argyris
Deputy Director, Market Intelligence
Trade Information Systems
Dept. of Foreign Affairs and Intel Trade

David Spicer
System Administrator
Electronic Information Access
Info Centre
DFAIT

Pierre Sabourin
Deputy Director
Development and Technical Support
Trade Information Systems
DFAIT

Douglas A. Rosenthal
Director
SIGNET - Client Services Division STC
DFAIT

Morley Martin
Senior Advisor
Trade Planning and Coordination Division
DFAIT

London:
Michael Clark
First Secretary (Forest Products)
Canadian High Commission

Gil Martin
Commercial Officer (Wood Products and
Building Materials)
Canadian High Commission

Cecile Latour
Counsellor (Commercial/Economics)
Canadian High Commission

Giles Scott
Commercial Officer
Canadian High Commission

B.K. Bhaneja
Counsellor (Science and Technology)
Canadian High Commission

Seoul:
Maurice Hladik
Minister Counsellor
Embassy of Canada

Washington, D.C.:
Mr. David Brown
Counsellor (Commercial)
Office of Liaison with International
Financial Institutions
The Canadian Embassy

Mr. David Buxton
Counsellor (Commercial)
Defense Programs
The Canadian Embassy

Mr. Robert J. Rutherford
First Secretary (Commercial)
The Canadian Embassy

Brussels:
Maurice Y. Bernier
Counsellor
Canadian Mission to the European Union
and Canadian Embassy to Belgium

Freddy Dutoit
Commercial Officer
Canadian Embassy

Stephen Brereton
Counsellor (Trade and Industry)
Canadian Mission to the European Union

Simon Doyon
Counsellor (Commercial and Economic)
Canadian Embassy

Appendix 3: Outline Used in Structured Interviews of Trade Officers in Vancouver

1. Review known information technologies.
 - current use
 - future enhancements
 - availability (all consulates/embassies, only some, accessible to general public)
 - how do they benefit trade promotion (usefulness, acceptance by trade reps)
2. Future of trade promotion
 - expanding/contracting activities
 - countries and regions of interest (why?)
 - how will trade promotion be carried out in the future
 - importance of person-to-person contacts
 - future role of trade reps
 - concentrate on particular industry?
 - how does services compare with other countries
 - trade promotion problems currently and anticipated in future
 - what would make your work more effective/efficient
3. Future trade promotion technologies
 - to be used by trade rep.'s country
 - promising technologies in general
 - can IT replace human trade promotion reps (e.g. Ontario)
4. Information technology and international trade
 - important trends and changes in international trade
 - expected impacts of information technology
5. Other sources of information
 - on your country's trade promotion IT
 - on your country's trade promotion in general
 - on trade promotion and IT in general
 - good contacts
 - other places to inquire (embassy, larger consulates)
6. Data related to use of information technology
 - number of users each year
 - trade leads
 - other feedback
7. Fees charged for services
 - how collected
 - percent of costs covered
 - use of IT to collect or monitor costs
8. Any other sources of information recommended
 - (besides your nation's activities)

Appendix 4: Selected Electronic Malls Currently Maintained on the World Wide Web

Title	Web Site Address
Branch Internet Services, Inc. Electronic Mall	http://ds.internic.net/cgi-bin/enthtml/business/branch-mall.b
CompuServe's Electronic Mall	http://www.compuserve.com/new/news_rel/mall.html
Digital's Electronic Mall	http://www.service.digital.com/html/email.html
Lincoln Telephone Company - Electronic Mall	http://www.ltec.net/Mall.html
Electronic Commerce on the Internet	http://www.riskweb.com/commerce.html
Dream Shop	http://www.pathfinder.com/DreamShop/live/

Appendix 5: Selected Databases Applicable to International Business*

Name of Database	Description
Dun and Bradstreet Market Identifiers	detailed company descriptions available for Canadian, U.S., European and firms
Canadian Business and Current Affairs	approximately 100,000 articles from Canadian business publications
Kompass	directory files for companies Canadian, European, Asia-Pacific and International editions
Directory of U.S. Importers and Exporters	Company profiles of U.S. firms involved in international trade
PAPERS	business and economics publications from throughout the United States
ABI/Inform	abstracts from over 1,000 publications
Source:Mex	foreign investment, foreign trade, foreign debt and other economic conditions in Mexico
Business International	economic and political trends, market analyses and corporate strategies from approximately 60 countries
Business Wire	mainly business-related news releases from over 10,000 news sources
Infomat International Business	abstracts from 6,000 business publications worldwide
International Information Report	leads and contact information for reports and databases
Investext	reports on over 4,000 companies
Moody's Corporate News	worldwide business and financial information
Tradstat World Trade Statistics Database	detailed monthly trade figures on over 60,000 products and 25 countries
Middle East/Africa Library	information on all countries in Africa and the Middle East from trade and business journals, and company reports
Asia-Pacific	business, economics and new industries in Pacific Rim nations
Asia/Pacific Rim Library	business news, financial analyses and trade information from newspapers, trade journals and company reports
Comtext (EEC Trade)	trade statistics for the European Union
Info-South	citations and abstracts from publications in Latin America discussion economic, political and social issues

* Adapted from *Sources of International Trade Information Available Electronically* (Version 2.0: Draft) Department of Foreign Affairs and International Trade, March 1995

Appendix 6: Selected WWW Homepages Related to International Trade

Title and Description	Web Site (URL)
National Trade Data Bank repository of trade data collected by 17 U.S. government agencies includes the latest Census data on U.S. imports and exports, the CIA World Factbook, market research reports by the U.S. and Foreign Commercial Service	http://www.stat-usa.gov
Centers for International Business Education and Research	http://www2.mgmt.purdue.edu/Centers/CIBER/ciber.htm
United States International Trade Commission	http://www.usitc.gov/
Trade Point USA	http://opus.natp.iftea.com/natp.html
Trends in Developing Economies Database Search	http://quasar.poly.edu:9090/WorldBank/tides.html
InfoQuest! International Trade Resources	http://www.teleport.com/~tbchad/intl4.html
International Trade Resources	http://infomanage.com/intltrade
TheWorld(TM) Guide to International Trade	http://www.theworld.com/BUSINESS/INTERNATIONAL/SUBJECT.HTM
ITLP Chronological List of International Trade Law Treaties and other relevant Trade Instruments	http://ananse.irv.uit.no/trade_law/nav/conventions.html
The World Bank Home Page	http://www.worldbank.org/
Welcome to the Organization of American States	http://www.oas.org/
INTERNATIONAL ECONOMIC REVIEW	http://www.usitc.gov/ier.htm
International Trade Forum Home Page	http://www.cityscape.co.uk/users/bm22/trade.html
G7 Projects	http://www.ispo.cec/g7/g7main.html
International Small Business Consortium	http://www.isbc.com/

Appendix 7: Electronic Databases Maintained by National Trade Promotion Organizations

1. The National Trade Data Bank (NTDB) (United States)

The NTDB is a compilation of trade-related data collected by 17 U.S. government agencies. Distributed on two CD-ROMs and updated monthly, the NTDB includes information found in:

- a) the latest census data on U.S. imports and exports,
- b) the CIA World Factbook,
- c) current market research reports by U.S. and Foreign Commercial Service,
- d) the Foreign Traders Index,
- e) State Department country reports,
- f) various publications such as Export Yellow Pages, A Basic Guide to Exporting and National Trade Estimates Report on Foreign Trade Barriers, and
- g) Export Promotion Calendar.

2. Export Databank (France)

Trade officers stationed overseas supply information to this system which the Board of External Trade in Paris makes accessible to companies interested in exporting. The data bank includes information on trade leads, international projects, international fairs and missions, and advice regarding entry of foreign markets. It also contains a list of trade-related contacts in France and abroad.

3. Export Intelligence Database and Exporter Intelligence Services (United Kingdom)

This service provides such trade-related information as published tenders, market openings, and specific sales opportunities to British firms based on leads received daily from diplomatic posts. Registered exporters can receive daily notices of relevant information by mail, fax or e-mail or by direct modem connection.

4. National External Promotion System (SIMPEX) (Mexico)

This database system is the main tool of Mexican trade officers, and is also available to the public. SIMPEX's four main functions are to:

- a) serve Mexican companies selling or trying to sell overseas,
- b) assist Mexican companies in obtaining foreign partners,
- c) aid foreign companies trying to buy Mexican goods and services, and
- d) assist foreign companies looking for Mexican partners.

Approximately 7,200 projects are currently on the SIMPEX database, which also includes information on business opportunities in Mexico, Mexican trade delegations, and international trade fairs.

5. Obelix (New Zealand)

Produced by Tradenz, New Zealand's national trade promotion agency, Obelix is distributed by CD-ROM with monthly online updates from New Zealand. The system, launched in 1996, contains information on about 4,500 exporters and facilitates e-mail communications between Tradenz officers and New Zealand firms. Obelix also assists Tradenz efforts to track the costs of its services.

6. Singapore Trade Connection (Singapore)

A compilation of government and commercial databases. Available on CD-ROM, this database provides extensive statistical and corporate data on economic activity in Singapore and profiles on several Asian countries. As well, exporters can access information on vendors, countries, international banks and trade associations with Singapore's Globalink online database.

Appendix 8: Selected Computer-Based Learning Tools for International Trade

1. The Country Consultant

Developed by researchers at Michigan State University's International Business Centers, the Country Consultant is an intelligent database intended to assist managers and executives in evaluating and selecting international markets. It employs artificial intelligence techniques to handle incompleteness and uncertainty in its database contents. The artificial intelligence functionality enables the system to infer responses when specific answers are not available (Bhargava, Evirgen, Mitri and Cavusgil, 1993).

2. Export to Win!

SMG Strategic Management Group, Inc., in association with the Port Authority of New York/New Jersey, developed Export to Win! to introduce SME to export marketing procedures. It is specifically designed to assist the international marketing initiatives by simulating several levels of the decision making process involved in marketing overseas. The program has the user assume the role of a marketing manager who needs to develop an export plan for her firm's two main products. The object is to make the fictitious company a successful exporter over a simulated five-year period by analyzing international markets, negotiating prices and creating a distribution network (Priovolos, 1993).

3. CORE II (Company Readiness to Export)

Michigan State University's International Business Centers also developed CORE II. According to Schmitt and Kearns (1993), the program is used to determine export readiness by evaluating:

- a) the organizational characteristics of the firm,
- b) the motivation for international sales,
- c) upper management commitment,
- d) the firm's product strengths, and
- e) the suitability of the company's products for foreign customers.

CORE II is designed to assist potential exporters and trade promotion organizations in developing a systematic approach to export market development by highlighting a firm's potential weaknesses prior to launching an international marketing campaign.

Appendix 9: Selected Cross-Section of Canadian Trade Promotion Services*

Organization	Emerging IT-Enabled Service	Description
Industry Canada	Business Opportunities Sourcing System (BOSS)	computerized database of 25,000 Canadian firms
	ICON Bulletin Board Service (similar materials available on the Internet)	general business and trade documents, messaging forum and training material
Revenue Canada	Revenue Canada Bulletin Board Service	information on regulations and procedures for importing goods into Canada and other documents
Alberta Department of Economic Development and Trade	International Business Information Service telephone help line	information on companies and governments abroad and the products they are sourcing
The Board of Trade of Metropolitan Montreal	fax-back system and telephone help lines	documents available on international trade and other topics
Ontario Ministry of Economic Development	Internet gopher and ftp sites	
Canadian Business Service Centres	fax-back and information service	cooperative program of regional offices operated by federal and provincial government departments provide domestic and international market assistance to local companies
Canadian Exporters' Association		provides export-related information and advice
The Export Development Corporation		an export credit agency supplying risk management services to exporters and their customers overseas

Organization	Emerging IT-Enabled Service	Description
Federal Business Development Bank		promotes the creation and development of SME through financing and advisory services
The Forum for International Trade Training	Windows-based training modules available through a network linking Forum partners	Joint effort of the Canadian Chamber of Commerce, The Canadian Exporters Association, the Canadian Federation of Labour, the Canadian Importers Association, the Canadian Manufacturers Association, the Canadian Professional Logistic Institute, the Canadian Professional Sales Association and the World Trade Centres. Provides international trade courses aimed at SME
The Standards Council of Canada		standards-related export information provides fee-based access to the Canadian Standards Database, the International Standards Database and other information sources

*The services of the Department of Foreign Affairs and International Trade (DFAIT) are not included in this table.

Appendix 10: National Telecommunications Indicators (data at January 1, 1993)

Country	Telephone Lines per 100 People	Mobile Telephone Subscribers per million population	Fax Machines per million population	Internet Host Computers
Australia	47.43	25,143	25,714	346
Canada	59.12	28,686	18,248	406
Chile	8.82	4,735	1,471	9
China	.99	153	77	0
Indonesia	.68	129	131	0
Japan	46.43	11,132	3,893	216
Malaysia	11.17	4,420	2,447	3
New Zealand	44.12	29,471	14,706	60
Philippines	1.09	170	8	0
Russia	15.38	40	n/a	0
Singapore	39.29	29,250	14,071	38
South Korea	36.38	6,222	5,721	38
Taiwan	35.29	18,680	9,709	165
Thailand	3.11	4,303	130	12
United States	56.51	43,267	23,529	5,904

* Minutes of telecommunications traffic

Source: Gregory C. Staple (1993)