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## Information and Communications Technologies and Electronic Commerce in Canadian Industry



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# **Information and Communications Technologies and Electronic Commerce in Canadian Industry**

Survey of Information and Communications Technologies and  
Electronic Commerce, 1999

By  
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## Highlights

- Businesses have embraced the use of information and communications technologies such as e-mail and the Internet and the PC is widely used in most businesses. Use of computers among enterprises was high at 81.9%. The Internet, originally designed as a communications medium for researchers is now being adopted by many other groups. The Internet was used by 52.8% of enterprises and these enterprises accounted for three-quarters of economic activity.
- The proportion of enterprises with Web sites was 21.7% and these enterprises account for 44.8% of economic activity in the private sector. Among other uses, the Internet was used to purchase goods and services by 13.8% of enterprises and by 10.1% to sell goods and services. Significant variation exists in the levels of information and communications technologies use across industries.
- The public sector is a model user of information and communications technologies. The proportion of institutions in public health, education and federal and provincial governments using the Internet and e-mail and having Internet Web sites is significantly higher than it is for the private sector. Over 95 % of institutions in the public sector use the Internet, 96.6% use e-mail and 69.2% have an Internet Web site.
- The volume of Internet-based sales reported was \$4.4 billion, of which \$4.2 billion was for the private sector and \$200 million for the public sector. Total private sector Internet based sales accounted for 0.2% of economic activity in terms of total operating revenue.
- For non-Internet users the most important reason for not buying or selling over the Internet was the belief that their goods or services do not lend themselves to concluding transactions over the Internet.
- Among Internet users, the most popular reason given for not using the Internet to purchase or sell was that they prefer to maintain their current business model.

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## Introduction

The subject of information and communications technologies and electronic commerce is of widespread interest and their use is rapidly expanding. Technological change is embraced by several sectors and virtually all sectors are undergoing major changes in technology use. The effect that technological change is having on the economy is being monitored in part by collecting statistics on the subject. This new survey provides measures of e-commerce use and the extent to which enterprises in the Canadian public and private sectors are using information and communications technologies and e-commerce. Variations across industries are examined as are differences across the use of technologies.

The survey content was developed in concert with Industry Canada and it employed definitions of electronic commerce that were developed by the OECD. It measures the value of customer orders placed over the Internet with or without online payment and it uses the narrower OECD definition of electronic transactions.<sup>1</sup> Many of the questions used in this survey were adopted from those developed by the OECD and its member countries. With the same questions asked on various national surveys, international comparisons of information and communications technologies and electronic commerce use will be feasible.

This survey focuses first on the use of information and communications technologies such as personal computers, e-mail and the Internet and distinguishes between private and public sector usage. Indications of the use, whether enterprises plan to use or have no plans to use the technologies are examined. Both the industries that are using and those that are not using the technologies are presented. It also addresses the extent of use of e-commerce and some of the reasons that businesses and institutions provide for not using the Internet to purchase and to sell. On the human resource side, this survey asks about employee access to various information and communications technologies and reports the percentage of employees with access to personal computers, e-mail and the Internet by industrial sector.

Web presence is determined by whether or not an enterprise or institution has an Internet Web site. Estimates by industry are presented for the percentage of enterprises or institutions within the industry with a Web site. The survey asked if the organization has a Web site and then it asked how much was spent in 1999 to upgrade or maintain the Internet Web site. Various ranges of values for expenditures on Web sites were provided for respondents to select from.

This is the world's first economy wide survey conducted by a national statistical agency that measures the value of electronic commerce. Other countries have measured various components of what this survey is measuring. The United States Census Bureau of the Department of Commerce (USBC) reports the value of sales over the Internet for the retail trade sector on a quarterly basis. This began in the fourth quarter of 1999.<sup>2</sup>

The Australian Bureau of Statistics (ABS) reported on business use of information technology in 1998 by industrial sector and did not measure the value of Internet sales. The first study on the topic of business use of information and communications technologies conducted by the Australian Bureau of the Census was in 1993 - 1994 and it covered topics related to computer use.<sup>3</sup> Statistics Canada made its first measurement of information and communications technologies use for selected service industries in 1996. (Hamdani, 1999). Previous studies of

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<sup>1</sup> The OECD narrow definition of electronic transactions is the following: An Internet transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over Internet-protocol based networks. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.

<sup>2</sup> The USBC Web site is [www.census.gov](http://www.census.gov)

<sup>3</sup> The ABS Web site address is [www.abs.gov.au](http://www.abs.gov.au).

business use of the Internet and information and communications technologies have covered specific sectors and have been somewhat fragmented.

## 1a. Which industries use and which ones plan to use the Internet?

To determine the extent to which various industries use certain information and communications technologies, the survey asked about the use, plans to use and if business had no plans to use the Internet, e-mail and personal computers. Results from these questions by industrial sector are in Tables 1, 2 and 3. (See "Methodology notes" for an explanation of the North American Industrial Classification System (NAICS) codes.)

The Internet as a communications tool is widely used by Canadian business. On average, a greater proportion of businesses uses the Internet than do not use the Internet. For the private sector, 52.8% of enterprises use the Internet and these represent 75.4% of economic activity of the private sector. Private enterprises with no plans to use the Internet accounted for 37.1% of enterprises.

**TABLE 1. Use and plans to use the Internet by industry**

Industrial Sector	% of enterprises that use Internet	% of enterprises that plan to use Internet within one year	% of enterprises that plan to use Internet after one year	% of enterprises with no plans to use Internet
Forestry, Logging and Support Activities*	32.8	5.5	3.0	58.7
Mining and Oil and Gas Extraction	60.6	4.8	3.9	30.7
Utilities	82.4	1.4	0.2	16.1
Manufacturing	63.7	8.7	3.2	24.4
Wholesale Trade	63.0	9.9	4.4	22.7
Retail Trade	40.5	9.4	6.7	43.5
Transportation and Warehousing	43.8	3.0	2.0	51.2
Information and Cultural Industries	89.1	0.0	1.2	9.8
Finance and Insurance	65.9	9.7	3.3	21.0
Real Estate and Rental and Leasing	46.3	3.6	1.2	48.9
Professional, Scientific and Technical Services	77.5	5.0	2.5	15.0
Management of Companies & Enterprises	47.0	2.4	1.4	49.1
Admin & Support, Waste Management & Remediation Services	55.4	5.7	4.5	34.4
Educational Services Private	74.5	6.5	0.8	18.2
Health Care and Social Assistance Private	46.2	6.3	5.9	41.6
Arts, Entertainment and Recreation	51.0	10.0	2.6	36.5
Accommodation and Food Services	32.0	5.2	3.1	59.7
Other Services (except Public Admin)	44.5	5.6	2.4	47.5
<b>All Private Sector</b>	<b>52.8</b>	<b>6.5</b>	<b>3.5</b>	<b>37.1</b>
Educational Services Public	99.2	0.8	0.0	0.0
Health Care and Social Assistance Public	92.8	3.7	1.6	1.9
Public Administration	98.0	1.5	0.5	0.0
<b>All Public Sector</b>	<b>95.4</b>	<b>2.6</b>	<b>1.0</b>	<b>1.0</b>

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999



There is some variability across industries in the use of the Internet. For the private sector, the largest proportion of enterprises using the Internet are in information and cultural industries (89.1%), utilities (82.4%) and professional, scientific and technical services (77.5%). Information and cultural industries include businesses engaged in publishing, broadcasting and telecommunications. Professional, scientific and technical services include the following services; legal, accounting, architectural, engineering, specialized design, computer systems design, management, scientific and technical consulting and scientific research and development. The industries with the largest proportion of enterprises with no plans to use the Internet include accommodation and food services (59.7%), forestry, logging and support activities (58.7%) and transportation and warehousing (51.2%).

Predominantly large firms are using the Internet. In arts, entertainment and recreation 51.0% of enterprises use the Internet, and these enterprises account for 76.6% of economic activity for that sector. The types of business in arts, entertainment and culture include performing arts, spectator sports and related industries, heritage industries, amusement, gambling and recreation industries. For the transportation and warehousing sector, where 43.8% of enterprises use the Internet, these enterprises account for 79.5% of economic activity for the sector. Included in the transportation and warehousing sector are air, rail, water, truck, transit and ground transportation. Pipeline and scenic and sightseeing transportation and postal service and warehousing and storage are also included in this sector.

Use of the Internet is widespread for the public sector with 95.4% of institutions using the Internet. Federal and provincial governments have 98.0% of institutions using the Internet and public educational services have 99.2% of institutions using it. For the remainder of institutions in these sectors that do not currently use the Internet, they all plan to use the Internet within one year or after one year.

For four sectors, over 40% of enterprises use the Internet and over 9% of enterprises plan to use the Internet within one year: The four sectors include arts, entertainment and culture; finance and insurance; retail trade; and wholesale trade. For the retail trade sector, the 9.4% of enterprises that plan to use the Internet within one year represent 11.3% of economic activity for that sector. This suggests that Internet use will increase rapidly in some sectors of the economy over the year 2000.

All industries except one have a larger proportion of enterprises with plans to use the Internet within one year than after one year. Information and cultural industries with 89.1% of enterprises already using the Internet have 1.2% of enterprises with plans to use the Internet after one year and no enterprises with plans to begin using within one year. These enterprises represent only 1.7% of economic activity for the sector.

## 1b. Which industries use and which ones plan to use e-mail?

A similar pattern to that indicated for Internet use exists for e-mail use. The largest proportion of enterprises using e-mail are in the public sector among federal and provincial governments and in public educational services. In total, 96.6% of enterprises in the public sector use e-mail. For the private sector, 52.6% of enterprises use e-mail. The largest proportion of enterprises using e-mail are in information and cultural industries (90.3%), utilities (83.9%) and professional, scientific and technical services (78.9%). These industry sectors also have the largest proportion of enterprises using the Internet of the private sector.

**TABLE 2. Use and plans to use e-mail by industry**

Industrial Sector	% of enterprises that use e-mail	% of enterprises that plan to use e-mail within one year	% of enterprises that plan to use e-mail after one year	% of enterprises with no plans to use e-mail
Forestry, Logging and Support Activities*	28.7	5.2	4.6	61.5
Mining and Oil and Gas Extraction	59.6	4.2	4.4	31.8
Utilities	83.9	1.2	0.2	14.7
Manufacturing	63.4	7.7	2.7	26.1
Wholesale Trade	65.0	5.4	4.3	25.3
Retail Trade	39.7	9.4	3.9	47.0
Transportation and Warehousing	38.8	3.8	1.4	55.9
Information and Cultural Industries	90.3	0.0	1.2	8.5
Finance and Insurance	75.5	4.2	1.1	19.3
Real Estate and Rental and Leasing	46.4	4.3	1.3	48.0
Professional, Scientific and Technical Services	78.9	4.7	1.4	15.0
Management of Companies & Enterprises	45.4	2.4	0.7	51.4
Admin & Support, Waste Management & Remediation Services	52.4	5.2	4.4	38.0
Educational Services Private	78.3	2.4	0.6	18.6
Health Care and Social Assistance Private	46.4	8.3	4.7	40.7
Arts, Entertainment and Recreation	51.6	7.6	1.9	38.9
Accommodation and Food Services	29.1	4.2	2.1	64.6
Other Services (except Public Admin)	42.6	6.3	3.4	47.7
<b>All Private Sector</b>	<b>52.6</b>	<b>5.9</b>	<b>2.8</b>	<b>38.8</b>
Educational Services Public	99.2	0.8	0.0	0.0
Health Care and Social Assistance Public	94.4	3.1	1.6	0.9
Public Administration	99.5	0.0	0.5	0.0
<b>All Public Sector</b>	<b>96.6</b>	<b>1.9</b>	<b>1.0</b>	<b>0.5</b>

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999

There are some enterprises with no plans to use e-mail. Other industries with low usage rates for e-mail have plans to use the information and communications technologies within one year. The largest proportion of enterprises with no plans to use e-mail are in accommodation and food services (64.6%) and forestry, logging and support activities (61.5%). Retail trade has the largest proportion (9.4%) of enterprises with plans to use e-mail within one year.

### 1c. Which industries use and which ones plan to use personal computers, workstations or terminals?

Personal computers, workstations or terminals are widely used in business and the survey reports that for every industry more than 65% of enterprises use personal computers. On average, for the public sector, 100% of enterprises use personal computers and in the private sector 81.9% of enterprises use personal computers. The lowest incidence of personal computer use is in forestry, logging and support activities in which 65.7% of enterprises use personal computers and 30.7% of enterprises have no plans to use personal computers. A small proportion of enterprises reports plans to use personal computers within one year and after one year.

**TABLE 3. Use and plans to use personal computers by industry**

Industrial Sector	% of enterprises that use PC	% of enterprises that plan to use PC within one year	% of enterprises that plan to use PC after one year	% of enterprises with no plans to use PC
Forestry, Logging and Support Activities*	65.7	1.4	2.2	30.7
Mining and Oil and Gas Extraction	87.7	1.6	0.7	10.0
Utilities	89.7	0.0	0.1	10.2
Manufacturing	90.8	1.3	0.5	7.4
Wholesale Trade	91.6	0.0	1.6	6.8
Retail Trade	76.1	1.5	1.0	21.4
Transportation and Warehousing	72.4	1.5	0.7	25.5
Information and Cultural Industries	93.5	0.0	0.0	6.5
Finance and Insurance	89.8	0.0	0.0	10.2
Real Estate and Rental and Leasing	76.3	0.9	0.0	22.8
Professional, Scientific and Technical Services	93.7	0.7	0.0	5.7
Management of Companies & Enterprises	69.6	0.0	0.0	30.4
Admin & Support, Waste Management & Remediation Services	81.5	3.2	1.0	14.3
Educational Services Private	93.6	0.3	0.7	5.5
Health Care and Social Assistance Private	89.9	0.4	0.7	9.0
Arts, Entertainment and Recreation	88.0	1.2	0.0	10.8
Accommodation and Food Services	66.4	0.8	0.8	32.0
Other Services (except Public Admin)	75.8	1.6	1.1	21.4
<b>All Private Sector</b>	<b>81.9</b>	<b>1.0</b>	<b>0.7</b>	<b>16.4</b>
Educational Services Public	100.0	0.0	0.0	0.0
Health Care and Social Assistance Public	100.0	0.0	0.0	0.0
Public Administration	100.0	0.0	0.0	0.0
<b>All Public Sector</b>	<b>100.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.  
Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.  
Source: Information and Communications Technologies and Electronic Commerce Survey, 1999

## 2. Employee access to personal computers, e-mail and the Internet

An indicator of the extent of adoption of technology is whether or not organizations use a technology and the level of adoption can be estimated by the proportion of employees with access to the technology. The survey asks respondents to report the percentage of employees with access to the following three information and communications technologies; personal computers, e-mail and the Internet. Results from this question are presented in Tables 4 and by 3 and 4 digit NAICS in Appendix A.

The survey shows that there is a close relationship between the percentage of employees having access to personal computers, e-mail and the Internet. Associated with high percentages of employees with access to personal computers are high percentages of employees with access to e-mail. For most industry groups, the percentage of employees with access to personal computers is greater than with access to e-mail.

The percentage of employees with access to e-mail is usually greater than the percentage of employees with Internet access. An exception to this is communications equipment manufacturing<sup>4</sup> where 70.8% of employees have access to e-mail and 75.3% have access to the Internet. For most cases where the percentage of employees with access to e-mail is less than the percentage with access to Internet the differences are quite small.

**TABLE 4. Percentage of employees with access to personal computers, e-mail and the Internet by industry**

Industrial Sector	Percentage of employees with access to PC, workstation or terminal	Percentage of employees with access to e-mail	Percentage of employees with access to Internet
Forestry, Logging and Support Activities *	34.6	15.0	17.0
Mining and Oil and Gas Extraction	53.4	41.8	29.7
Utilities	80.7	78.2	58.6
Manufacturing	42.7	28.2	20.4
Wholesale Trade	77.0	55.7	46.1
Retail Trade	53.4	19.0	13.1
Transport and Warehousing	40.6	25.5	17.9
Information and Cultural Industries	91.2	78.9	73.8
Finance and Insurance	88.0	71.9	47.9
Real Estate and Rental and Leasing	58.7	34.7	34.8
Professional, Scientific and Technical Services	86.0	66.7	60.3
Management of Companies & Enterprises	60.1	44.4	37.2
Admin & Support, Waste Management & Remediation Services	53.7	38.1	33.4
Educational Services Private	76.9	66.9	66.2
Health Care and Social Assistance Private	62.0	30.5	27.1
Arts, Entertainment and Recreation	49.0	29.0	24.4
Accommodation and Food Services	30.5	7.9	7.1
Other Services (except Public Admin)	56.3	37.5	37.4
<b>All Private Sector</b>	<b>55.6</b>	<b>34.4</b>	<b>28.4</b>
Educational Services Public	93.2	90.3	90.1
Health Care and Social Assistance Public	56.0	36.3	22.8
Public Administration	93.5	92.1	82.2
<b>All Public Sector</b>	<b>76.8</b>	<b>66.7</b>	<b>59.0</b>

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999

## 2a. The percentage of employees with access to the Internet

There are significant differences between the public and private sectors in terms of employee access to the Internet. In the public sector 59.0% of employees have access to the Internet and in the private sector a significantly lower percentage of employees have access to the Internet (28.4%). For enterprises in the public educational services sector 90.1% of employees have access to the Internet and in the federal and provincial government, 82.2% of employees have access to the Internet. The federal and provincial government is comprised of federal and provincial governments and aboriginal public administration.

<sup>4</sup> Communications equipment manufacturing is represented by North American Industrial Classification System (NAICS) 3342.

The private sector industry having the largest proportion of employees with access to the Internet is information and cultural industries (73.8%) followed by private educational services (66.2%) and professional, scientific and technical services (60.3%). Broadcasting and telecommunications (73.2%) and motion picture and sound recording industries (77.1%) have the greatest percentages of employees with access to the Internet in information and cultural industries. Business schools and computer and management training (96.1%) have the largest proportion of enterprises with Internet access in private educational services. Computer system design and related services (92.7%) report the largest percentage for the professional, scientific and technical services industry.

Industries with a low proportion of employees having access to the Internet include accommodation and food services (7.1%). This industry is composed of accommodation services with 12.2% of employees with Internet access and food services and drinking places with 5.9% of employees with Internet access. Retail trade has a relatively low proportion of employees with access to the Internet (13.1%) because of low reported access levels among food, beverage and general merchandise stores and gasoline stations. The survey reports that forestry, logging and support activities have 17.0% of employees with access to the Internet. This is comprised of forestry and logging with 12.9% having access and support activities for agriculture and forestry with 24.9%. These industry sectors also report a low incidence of employees having access to e-mail and personal computers.

Please see Appendix A. Percentage of employees with access to personal computers, workstations or terminals by industry group.

## 2b. The percentage of employees with access to e-mail and personal computers, workstations or terminals

The proportion of employees with access to e-mail is almost double in the public sector compared to the private sector. In the private sector 34.4% of employees have access to e-mail and in the public sector 66.7% have access to e-mail. A larger percentage of employees have access to personal computers than to e-mail in each sector. For the private sector, 55.6% of employees have access to personal computers and the corresponding figure for the public sector is 76.8%.

A large percentage of employees have access to personal computers in several private sector industries. The industry sectors with a high proportion of employees with personal computer access are: computer design and related services (99.4%) NAICS 5415; credit intermediation and related services (97.9%) NAICS 522; monetary authorities central bank (96.8%) NAICS 521; computer and peripheral equipment manufacturing (94.6%) NAICS 3341; and oil and gas extraction (94.4%) NAICS 211. The same industry groups also report high proportions of employees with access to e-mail.

## 3. Enterprises with an Internet Web site

There are many functions a Web site can serve. It may provide information about the company, a list or catalogue of available goods or services, product or service information, after sales service, tracking of orders and the capability to make online payments. Although some industries report high use of the Internet for selling, the same industries do not rank as having the highest proportion of enterprises with a Web site. This may be because they use other means to sell over the Internet other than selling through their Web site. Having a Web site is much more popular among businesses and the public sector than selling over the Internet is at this time. One

question on the survey referring to Web sites is do you have a Web site. The results of this question by industry sector are in Table 5.

For the private sector, 21.7% of enterprises have an Internet Web site. These enterprises account for 44.8% of economic activity for the private sector. Of enterprises that use the Internet, the proportion of those with a Web site is 41.1%.

The industry with the largest proportion of enterprises with a Web site is information and cultural industries (61.7%). Private educational services including private elementary schools, community colleges, technical, trade and language schools report having a Web site for 44.0% of enterprises. For the manufacturing sector 31.7% of enterprises have an Internet Web site and they account for more than half (55.4%) of economic activity for the sector. For utilities, 27.3% of enterprises have a Web site and they account for the majority of economic activity for the sector (90.2%). The industry with the lowest proportion of enterprises with a Web site is forestry, logging and support activities with 5.7% of enterprises with a Web site.

**TABLE 5. Proportion of enterprises with an Internet Web site by industry**

Industrial Sector	% of enterprises with a Web site	% of economic activity attributable to those who have a Web site	% of enterprises that use Internet and have a Web site
Forestry, Logging and Support Activities *	5.7	11.8	17.4
Mining and Oil and Gas Extraction	27.6	51.2	45.6
Utilities	27.3	90.2	33.1
Manufacturing	31.7	55.4	49.8
Wholesale Trade	26.1	48.9	41.5
Retail Trade	16.0	32.3	39.5
Transport and Warehousing	17.6	51.1	40.3
Information and Cultural Industries	61.7	80.2	69.3
Finance and Insurance	27.2	39.0	41.3
Real Estate and Rental and Leasing	18.4	30.3	39.7
Professional, Scientific and Technical Services	27.6	53.5	35.6
Management of Companies & Enterprises	9.9	29.4	21.0
Admin & Support, Waste Management & Remediation Services	29.5	55.6	53.3
Educational Services Private	44.0	66.5	59.0
Health Care and Social Assistance Private	10.0	22.7	21.7
Arts, Entertainment and Recreation	29.7	28.7	58.1
Accommodation and Food Services	17.4	28.1	54.4
Other Services (except Public Admin)	19.3	30.8	43.5
<b>All Private Sector</b>	<b>21.7</b>	<b>44.8</b>	<b>41.1</b>
Educational Services Public	97.6	97.1	98.4
Health Care and Social Assistance Public	50.0	51.0	53.9
Public Administration	87.8	91.2	89.5
<b>All Public Sector</b>	<b>69.2</b>	<b>75.7</b>	<b>72.5</b>

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999

Web sites exist for 69.2% of enterprises in the public sector. This is dominated by public educational services with 97.6% of enterprises having an Internet Web site and public administration with 87.8% of enterprises having a Web site. Organizations in health care and social assistance with a Web site represent 50.0% of enterprises in the public sector.

#### 4. The cost of maintaining and upgrading Internet Web sites in 1999

For businesses and enterprises that report having a Web site, the questionnaire asks them to report the cost of maintaining and upgrading their Web site. Table 6 shows the results of this question by industry sector.

**TABLE 6. Proportion of enterprises by cost of maintaining and upgrading Internet Web site in 1999, by industry**

Industrial Sector	\$0	\$1 to \$4,999	\$5,000 to \$9,999	\$10,000 to \$19,999	\$20,000 to \$99,999	\$100,000 to \$499,999	\$500,000 & over
Forestry, Logging and Support Activities	14.2	83.4	0.0	1.7	0.6	0.0	0.0
Mining and Oil and Gas Extraction	16.5	59.1	11.3	5.8	5.3	0.9	1.0
Utilities	21.4	60.9	6.8	3.6	3.7	2.3	1.3
Manufacturing	13.4	67.9	8.6	3.5	5.6	0.8	0.3
Wholesale Trade	19.9	59.3	10.7	5.2	3.8	0.6	0.5
Retail Trade	18.8	70.8	6.5	0.3	3.5	0.1	0.1
Transport and Warehousing	19.0	69.0	2.4	2.6	4.1	0.6	2.3
Information and Cultural Industries	15.4	59.9	7.2	11.2	3.3	1.3	1.8
Finance and Insurance	20.5	66.5	0.2	3.1	3.6	3.6	2.6
Real Estate and Rental and Leasing	20.9	71.0	2.3	3.4	2.4	0.1	0.0
Professional, Scientific and Technical Services	15.5	66.4	7.3	5.2	3.9	0.2	1.5
Management of Companies & Enterprises	11.3	83.1	4.5	0.2	0.7	0.0	0.1
Admin & Support, Waste Management & Remediation Services	15.0	61.4	9.5	5.0	6.7	0.1	2.4
Educational Services Private	19.3	57.4	7.6	4.7	9.3	0.2	1.6
Health Care and Social Assistance Private	22.6	65.4	8.4	0.2	3.4	0.0	0.0
Arts, Entertainment and Recreation	25.9	66.3	3.2	3.6	0.7	0.2	0.0
Accommodation and Food Services	15.9	73.9	4.9	0.3	2.4	2.6	0.0
Other Services (except Public Admin)	25.7	64.1	2.8	4.1	2.6	0.7	0.0
<b>All Private Sector</b>	<b>18.3</b>	<b>66.6</b>	<b>6.2</b>	<b>3.6</b>	<b>3.8</b>	<b>0.7</b>	<b>0.9</b>
Educational Services Public	2.9	19.6	10.5	12.0	35.4	18.7	0.8
Health Care and Social Assistance Public	7.6	58.1	10.0	10.5	8.1	5.6	0.0
Public Administration	7.4	14.9	6.6	11.0	20.1	16.9	23.0
<b>All Public Sector</b>	<b>5.9</b>	<b>34.0</b>	<b>9.4</b>	<b>11.2</b>	<b>20.7</b>	<b>13.0</b>	<b>5.8</b>

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999

The cost of maintaining and upgrading Internet Web sites in 1999 was variable across industries. The most frequently reported amount of spending for upgrades or maintenance of Web sites for those enterprises with Web sites is under \$5,000. There is nevertheless, some variability across industries for the cost of maintaining and upgrading Web sites. For the private sector 66.6% of enterprises with a Web site report spending under \$5,000 and for the public sector 34.0% of institutions report spending this amount. For federal and provincial governments, 23.0% of institutions report spending over \$500,000 on upgrading or maintaining their Internet Web site including salaries. For the private sector, this range of expenditure is reported by on average 0.9% of enterprises in the sector.

Several enterprises report not spending any funds on Web site maintenance or upgrades and there is a high concentration of responses in the range of under \$5,000 for maintenance and upgrading costs. Possible explanations for the large proportions of organizations spending less than \$5,000 are that newer Web sites require fewer changes; few changes were required to maintain the Web sites; and a large proportion of Web sites were less complex and required little maintenance.

## 5. Proportion of enterprises that sell over the Internet

Many factors may contribute to the dispersion across industries and organizations in the propensity to sell over the Internet. For example, an established business model for organizations may preclude the use of the Internet as a channel over which to conduct business. If a business has a small number of customers then using an open communications network such as the Internet that can reach a wide market may not be necessary. The Internet is an open communications network in contrast to proprietary networks over which several organizations have been conducting business for some time using Electronic Data Interchange (EDI). The low percentage of enterprises that use the Internet to sell indicates that organizations are still using other methods to sell goods or services.

**TABLE 7. Proportion of enterprises by industry that use the Internet to sell goods or services**

Industrial Sector	% of enterprises that use Internet to sell goods or services	% of economic activity attributable to enterprises that use the Internet to sell	% of enterprises that use Internet and use it to sell goods or services
Forestry, Logging and Support Activities *	1.1	0.9	3.5
Mining and Oil and Gas Extraction	7.1	5.2	11.7
Utilities	9.2	9.8	11.1
Manufacturing	14.9	16.3	23.3
Wholesale Trade	13.6	17.1	21.5
Retail Trade	10.9	21.9	27.0
Transport and Warehousing	10.1	21.1	23.0
Information and Cultural Industries	20.1	44.3	22.6
Finance and Insurance	14.7	23.0	22.3
Real Estate and Rental and Leasing	9.5	11.5	20.5
Professional, Scientific and Technical Services	11.5	14.9	14.8
Management of Companies & Enterprises	8.0	3.7	17.1
Admin & Support, Waste Management & Remediation Services	17.3	23.3	31.2
Educational Services Private	17.3	22.2	23.2
Health Care and Social Assistance Private	3.1	6.3	6.6
Arts, Entertainment and Recreation	10.1	9.8	19.7
Accommodation and Food Services	7.9	16.3	24.7
Other Services (except Public Admin)	3.7	5.0	8.3
<b>All Private Sector</b>	<b>10.1</b>	<b>17.0</b>	<b>19.1</b>
Educational Services Public	32.2	43.4	32.4
Health Care and Social Assistance Public	3.1	3.3	3.3
Public Administration	24.7	28.2	25.2
<b>All Public Sector</b>	<b>14.5</b>	<b>23.1</b>	<b>15.2</b>

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999



For organizations that report using the Internet, the survey asks if they use the Internet to sell goods and services. Tabulations from this question are presented in Table 7 by industry for the total population of businesses and for that group of businesses that are Internet users.

The proportion of enterprises in the private sector that use the Internet to sell goods and services is 10.1%. Private sector enterprises that use the Internet to sell constitute 17% of economic activity. Economic activity is measured in terms of total operating revenue. For the enterprises that use the Internet, 19.1% use it for the purpose of selling goods or services.

Of all industries in the private sector, the information and cultural industries have the largest percentage of enterprises that use the Internet to sell goods and services (20.1%). Information and cultural industries include businesses that are involved in publishing, broadcasting and telecommunications. Some of these businesses are instrumental in providing the services necessary to use the Internet such as telecommunications carriers, broadcasters and information services.

Enterprises in the private educational services and administration and support services sectors that use the Internet reported the second largest proportion of use of the Internet to sell (17.3%). In the forestry, logging and support sector, a significantly lower proportion of enterprises report using the Internet to sell (1.1%). For forestry, logging and support activities, of the enterprises that use the Internet, 3.5% use the Internet to sell goods or services. This suggests traditional sales channels continue to be used by businesses in this sector and many others.

For the public sector, 14.5% of institutions use the Internet to sell goods or services. Educational services use the Internet the most for selling and federal and provincial governments use the Internet the second most to sell goods and services. For the educational sector, items sold over the Internet include courses (tuition fees) and course registration for publicly funded educational institutions. Included in the public sector are online sales of data, for example, from Statistics Canada and the online payment of user fees for various services offered by provincial and federal governments.

## 6. Total customer orders via the Internet with or without online payment

The Internet is a viable option considered in making travel arrangements, booking accommodation, purchasing books, searching for employment opportunities and conducting financial transactions. All of these activities are carried out by the sectors for which selling on the Internet is more common than purchasing.

For businesses and institutions that report using the Internet to sell goods or services, they are asked, on the questionnaire, to report total customer orders via the Internet with or without online payment. The values of Internet sales by Industry are reported in Table 8.

The total value of customer orders received over the Internet with or without online payment, in 1999, amounted to \$4.4 billion. Of total Internet sales, \$4.2 billion was for the private sector and \$200 million was for the public sector. Expressed as a percentage of total operating revenue for the private sector the value of orders received over the Internet is 0.2% of total operating revenue. The value of customer orders includes all orders that were placed over the Internet, telephone, facsimile, e-mail, Web site, EDI (Electronic Data Interchange) over the Internet and other methods of receiving orders via the Internet.

The largest values for Internet sales are for the following sectors: manufacturing (\$900.0 million); retail trade (\$610.6 million); information and cultural industries (\$552.7 million); accommodation and food services (\$429.3 million); professional, scientific and technical services (\$406.1 million); and finance and insurance (\$320.8 million). Combined, these sectors constitute 77.0% of all private sector Internet sales in 1999.

**TABLE 8. Value of Internet sales**

Industrial Sector	in \$ millions		Internet sales as percentage of total operating revenue
	Internet sales with or without on-line payment	Total operating revenue, 1999 (Quarterly financial statistics for enterprises) <sup>1</sup>	
Manufacturing	900.0	568,346	0.2
Retail Trade	610.6	231,622	0.3
Information and Cultural Industries	552.7	55,910	1.0
Accommodation and Food Services	429.3	32,474	1.3
Professional, Scientific and Technical Services	406.1	52,116	0.8
Finance and Insurance	320.8	222,483	0.1
Transport and Warehousing	164.3	65,268	0.3
Wholesale Trade	156.3	290,440	0.1
Real Estate and Rental and Leasing	114.8	37,954	0.3
Other Services (except Public Admin)	27.4	37,439	0.1
Utilities	15.8	24,499	0.1
Mining and Oil and Gas Extraction	15.0	67,517	0.0
Health Care and Social Assistance Private	10.0	11,441	0.1
Other Industry Sectors <sup>2</sup>	456.6	104,577	0.4
<b>All Private Sector</b>	<b>4,179.7</b>	<b>1,802,086</b>	<b>0.2</b>
Educational Services Public	125.9		
Health Care and Social Assistance Public	20.1		
Public Administration	98.6		
<b>All Public Sector</b>	<b>244.6</b>		
<b>Total</b>	<b>4,424.3</b>		

<sup>1</sup> CANSIM sum of total operating revenue for each quarter of 1999 excluding NAICS 23 (Construction).

<sup>2</sup> Other industry sectors include: Administration and support; Waste management and remediation services; Arts, entertainment and recreation; Private educational services; Management of companies and enterprises; and Forestry, logging and support activities. NAICS 113 (Forestry and logging) and NAICS 115 (Support activities for agriculture and forestry) are included in Forestry, logging and support activities.

## 7. Proportion of enterprises that purchase over the Internet

For some industries, a greater proportion of enterprises sell on the Internet than purchase. These industries are: retail trade; finance and insurance; real estate and rental and leasing; administration and support, waste management and remediation services; and accommodation and food services. Some of the activities that these industries engage in are selling books, making travel arrangements, booking accommodation, providing employment opportunities, and conducting financial transactions. These activities are likely to be business to consumer transactions.

On the survey, organizations that report using the Internet are asked if they use the Internet to purchase goods or services. Tabulations from this question are presented in Table 9 and show the proportion of enterprises by industry that use the Internet to purchase goods or services.

Organizations in information and cultural industries, professional scientific and technical services and utilities are more likely to purchase over the Internet than to sell. Examples of the activities engaged in by these industries are providing telecommunications services, engaging in computerized design services and providing electric power generation services. The bulk of the business transacted by these industries is likely to be business to business transactions.

On average, a greater proportion of enterprises use the Internet to purchase goods and services than use the Internet to sell. For the private sector, 13.8% of all enterprises use the Internet to purchase and these enterprises constitute 25.1% of economic activity for the private sector. Of enterprises that use the Internet, 26.2% of them use the Internet to purchase goods or services.

Among private sector industries, the information and cultural industry has the highest percentage of enterprises reporting use of the Internet for purchasing (49.6%) goods or services. This industry also has the highest percentage of enterprises using the Internet for selling goods or services.

**TABLE 9. Proportion of enterprises that use the Internet to purchase goods or services by industry**

Industrial Sector	% of enterprises that use Internet to purchase goods or services	% of economic activity attributable to enterprises that use the Internet to purchase	% of enterprises that use Internet and use it to purchase goods or services
Forestry, Logging and Support Activities *	7.4	10.6	22.5
Mining and Oil and Gas Extraction	19.3	24.5	31.9
Utilities	24.7	37.7	30.0
Manufacturing	18.9	31.8	29.7
Wholesale Trade	13.9	23.2	22.1
Retail Trade	10.8	15.7	26.7
Transport and Warehousing	10.7	27.8	24.4
Information and Cultural Industries	49.6	53.6	55.7
Finance and Insurance	12.7	39.5	19.2
Real Estate and Rental and Leasing	8.2	11.3	17.7
Professional, Scientific and Technical Services	30.0	39.7	38.8
Management of Companies & Enterprises	12.9	16.8	27.4
Admin & Support, Waste Management & Remediation Services	13.4	17.7	24.2
Educational Services Private	27.2	35.3	36.4
Health Care and Social Assistance Private	9.5	14.4	20.6
Arts, Entertainment and Recreation	12.1	16.5	23.8
Accommodation and Food Services	3.9	8.5	12.3
Other Services (except Public Admin)	6.5	10.3	14.6
<b>All Private Sector</b>	<b>13.8</b>	<b>25.1</b>	<b>26.2</b>
Educational Services Public	60.6	65.5	61.1
Health Care and Social Assistance Public	34.7	37.2	37.3
Public Administration	50.7	59.8	51.8
<b>All Public Sector</b>	<b>44.2</b>	<b>52.0</b>	<b>46.4</b>

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999

For the public sector, 44.2% of institutions use the Internet to purchase goods or services and 52.0% of economic activity is attributable to those enterprises. For the public sector, as with the private sector, using the Internet to purchase is more popular than it is for selling. This is true for all sectors of the public sector including education, health and federal and provincial governments. Of institutions in the public sector that use the Internet, the proportion that use it for the purpose of purchasing goods or services is 46.4% of institutions. The public educational services sector has the greatest proportion (60.6%) of institutions that use the Internet to purchase of all industries in the public sector.

Three industries report a significantly greater use of the Internet to sell than to purchase. These industries are accommodation and food services, administration and support, waste management and remediation services, and finance and insurance. This suggests that enterprises in the industries that are selling over the Internet have invested the required resources to facilitate Internet sales or they have clients or suppliers who prefer to transact over the Internet rather than over other channels. Accommodation and food services include hotels, resorts, casino hotels, campgrounds and hunting and fishing camps, and restaurants. Administration and support, waste management and remediation services includes employment services, telephone call centres, travel agencies, tour operators, services to buildings such as janitorial, landscaping, and waste collection services. Finance and insurance includes banks, securities brokerage, insurance carriers and pension funds.

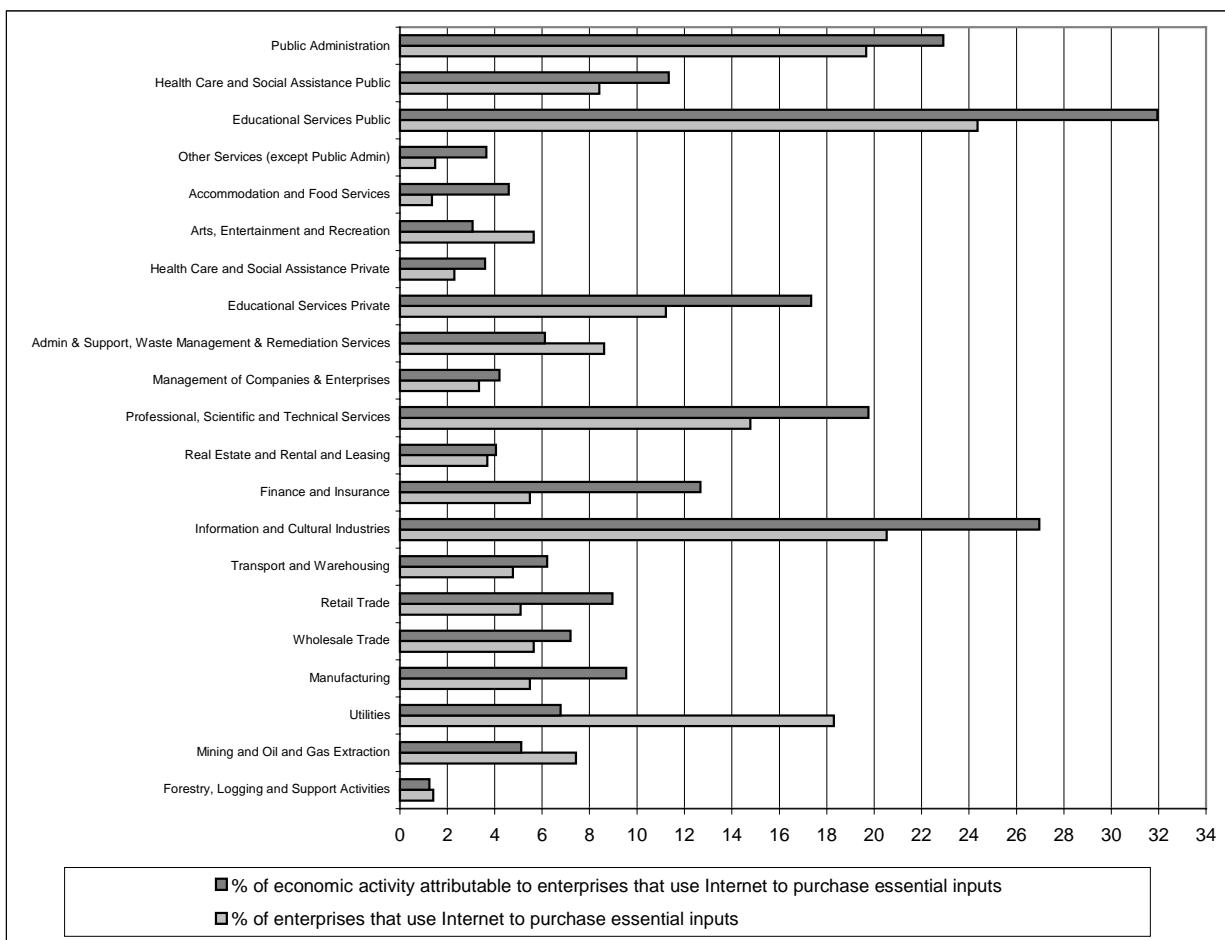
## 8. Purchasing essential inputs over the Internet

The 1999 survey attempted to obtain information about the extent to which the Internet was being used as part of the supply chain of Canadian business. The survey collected the information by asking the following question. Does your organization use the Internet to purchase inputs such as goods or services that are essential to your business? The determination of what constituted essential was left to the respondent. Results of this question are shown in Figure 1.

For all industries in the private sector, 5.8% of enterprises use the Internet to purchase essential inputs. This indicates that widespread use of the Internet as a medium over which purchases of goods and services are made has not yet been realized. The industries reporting more than 14% of enterprises purchasing essential inputs over the Internet include information and cultural industries (20.5%), utilities (18.3%) and professional, scientific and technical services (14.8%). In some sectors, the use of the Internet in purchasing is slightly more prevalent than in others; however, the majority of enterprises do not purchase essential inputs over the Internet.

The public sector reports greater use of the Internet for the purchase of essential inputs with 14.6% of institutions using the Internet for essential input purchases. The largest contributor to this figure is public educational services with 24.3% of institutions reporting using the Internet to purchase essential inputs. Federal and provincial governments are second with 19.7% of institutions reporting purchases of essential inputs over the Internet. Given that more institutions in the public sector use the Internet for purchases than do those in the private sector, this indicates that the public sector may be prepared to move towards an Internet based environment for conducting some transactions.

**FIGURE 1. Use the Internet to purchase essential inputs by industry**



## 9. The importance of various factors in the reasons organizations do not buy or sell over the Internet.

The survey addressed the reasons that business and institutions have for not using the Internet to engage in electronic commerce. The question asked on the survey was the following: Please rate the importance of the following factors in the reasons your organization does not buy or sell goods over the Internet.

1. *Goods or services we produce do not lend themselves to concluding transactions over the Internet*
2. *Security concerns (e.g. concerns of undetected or unauthorized data changes)*
3. *Already have significant investment in non-Internet network*
4. *The Internet is too slow*
5. *Lack of skilled employees to develop maintain and use technology*
6. *Prefer to maintain current business model (e.g. face to face interaction)*

Tabulations of this question are presented for non Internet users and Internet users in Tables 10 and 11 and in Appendix B.

## Non Internet users

The most important reason for not using the Internet was goods or services produced by businesses do not lend themselves to concluding transactions over the Internet. For the private sector, 35.3% of enterprises that do not use the Internet selected this reason as being very important. The corresponding figure for the public sector was 37.0%. The second most popular reason for not using the Internet, or not transacting business over the Internet was that enterprises prefer to maintain the current business model (e.g. face to face interaction). For the private sector, 32.9% of institutions selected this reason to be very important. Security concerns (e.g. concerns of undetected or unauthorized data changes) were the third most popular reason with 21.3% of private sector enterprises selecting this reason to be very important. The public sector responses were similar to private sector responses although security concerns ranked ahead of the preference to maintain the current business model.

**TABLE 10. Non Internet users and their reasons for not using the Internet to purchase or to sell**

	very important	important	not important	not applicable	
All Private Sector	35.3	15.8	15.5	33.5	<i>Goods or services we produce do not lend themselves to concluding transactions over the Internet.</i>
	4.5	10.0	30.4	55.1	<i>The Internet is too slow</i>
	6.6	17.9	23.3	52.2	<i>Lack of skilled employees to develop maintain and use technology</i>
	32.9	22.7	10.4	34.0	<i>Prefer to maintain current business model (e.g. face to face interaction)</i>
	21.3	18.2	17.5	43.0	<i>Security concerns (e.g. concerns of undetected or unauthorized data changes)</i>
	6.9	14.4	21.6	57.1	<i>Already have significant investment in non-Internet network</i>
All Public Sector	37.0	13.5	9.6	39.9	<i>Goods or services we produce do not lend themselves to concluding transactions over the Internet.</i>
	2.6	13.0	32.2	52.2	<i>The Internet is too slow</i>
	5.8	23.4	24.4	46.4	<i>Lack of skilled employees to develop maintain and use technology</i>
	14.6	22.8	22.3	40.3	<i>Prefer to maintain current business model (e.g. face to face interaction)</i>
	27.3	25.9	11.1	35.7	<i>Security concerns (e.g. concerns of undetected or unauthorized data changes)</i>
	6.1	16.2	30.6	47.0	<i>Already have significant investment in non-Internet network</i>

## Internet users

For Internet users in the private sector, the reason most frequently selected as being very important for not buying and selling over the Internet was that they prefer to maintain their current business model. Of private sector enterprises, 31.7% reported this reason to be very important. For Internet users in the public sector, goods and services produced do not lend themselves to concluding transactions over the Internet was the most popular reason. More than one third of institutions in the public sector (38.0%) reported this reason to be very important. This was followed closely, for the public sector, by the preference to maintain the current business model (24.9%).

**TABLE 11. Internet users and their reasons for not using the Internet to purchase or to sell**

	very important	important	not important	not applicable	
All Private Sector	21.9	9.5	12.8	55.9	<i>Goods or services we produce do not lend themselves to concluding transactions over the Internet.</i>
	2.1	5.4	20.3	72.2	<i>The Internet is too slow</i>
	6.3	12.5	15.1	66.1	<i>Lack of skilled employees to develop maintain and use technology</i>
	31.7	14.3	7.1	46.8	<i>Prefer to maintain current business model (e.g. face to face interaction)</i>
	11.8	11.6	15.4	61.2	<i>Security concerns (e.g. concerns of undetected or unauthorized data changes)</i>
	4.8	8.7	15.7	70.8	<i>Already have significant investment in non-Internet network</i>
All Public Sector	38.0	7.6	7.6	46.8	<i>Goods or services we produce do not lend themselves to concluding transactions over the Internet.</i>
	7.6	3.8	34.8	53.8	<i>The Internet is too slow</i>
	9.9	43.9	15.2	31.0	<i>Lack of skilled employees to develop maintain and use technology</i>
	24.9	26.6	19.0	29.5	<i>Prefer to maintain current business model (e.g. face to face interaction)</i>
	22.8	31.6	22.8	22.8	<i>Security concerns (e.g. concerns of undetected or unauthorized data changes)</i>
	15.2	14.1	32.7	38.0	<i>Already have significant investment in non-Internet network</i>

## Methodology notes

### Characteristics and coverage

The Information and Communications Technologies (ICT) and Electronic Commerce survey was conducted for the first time from October 1999 to March 2000. The survey covered the 12-month period from January 1, 1999 until December 31, 1999. It covered the entire economy, with the

exception of construction, local governments, production of crops and animals, fishing, hunting and trapping. About 23,000 firms received the questionnaire and the response rate was 65%.<sup>5</sup>

E-commerce is defined as Internet-based commerce. Respondents were asked to report the value of orders received over the Internet, extranets and electronic data interchange (EDI) on the Internet, regardless of whether the transaction was made with or without online payment. Excluded from this were sales via EDI on proprietary networks and other electronic networks. Automatic teller machine transactions are excluded as are the volume of financial transactions conducted over the Internet. Included are the service charges received for conducting transactions over the Internet.

### Sampling methodology

The sample for the survey was stratified by geographic location based on 10 provinces and 3 territories with no intra-provincial refinement. For the industrial stratification, NAICS (North American Industrial Classification System) 1997 was used at the level required for estimation purposes. For example, if, for a certain industry, the most disaggregated level published corresponds to the 3-digit NAICS, then this was the stratification level.

After the initial stratification was established, the coefficient of variation (CV) was targeted using the revenue variable to obtain the required CV for the most disaggregated publication level. A coefficient of variation is a measure of the variability of an estimate. The coefficient of variation is calculated by dividing the standard error by the value of the estimate. To see more detail about allocation please see Statistics Canada catalogue 61-206-XIB.

Sample selection is done using two strata. For the take-some strata, selection is based on a simple random process. A minimal fraction of 1% is imposed and a minimum of 3 units is required where possible. In the take-all strata, all units are sampled with certainty. This selection method forces no unit into the sample and takes no account of the sample previously selected.

### Data collection

After the sample was selected, a questionnaire was mailed out and respondents were urged to complete and return it. Units that had not responded by a particular date were subject to mail and telephone follow-up to ensure the data were obtained. Once the data were captured, edits were performed on the data. Consistency edits ensured comparability across related fields. Validity edits ensured the correct magnitudes of numbers were reported.

### Response and non response

The overall response rate for the survey was 65%. Non response to surveys can take two forms. Sampled establishments may choose not to respond to any questions on the questionnaire. This is referred to as complete non-response. When only parts of the questionnaire are filled in even though more information should have been provided, this is referred to as partial non-response or item non-response. For this survey, the complete non-response was average and the item non-response was quite low for most questions on the survey. About 35% of active in-scope units did not respond at all. In addition, of those who responded they frequently completed most of the questionnaire. Complete non-response was dealt with by adjusting the weights of respondents and imputation was used to account for item non-response.

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<sup>5</sup> The questionnaire is available on the Statistics Canada Web site under questionnaires at [www.statcan.ca/english/research/scilist.htm](http://www.statcan.ca/english/research/scilist.htm) in English and at [www.statcan.ca/francais/research/scilist\\_f.htm](http://www.statcan.ca/francais/research/scilist_f.htm) in French.



## Non response survey

To determine if non-response introduced any bias into the estimates, a non response survey was conducted. In the survey the non responding group of companies was compared to the companies that responded to the questionnaire to determine if there was a difference between the two groups. The sample of non respondents was randomly selected from the group of 35% of companies in the sample that did not respond to the survey. This was conducted by contacting the non respondents by telephone and asking them a set of key questions that were required to be answered by respondents. It was found that there was no significant difference in their answers to these key questions for the population of respondents and the population of non respondents. For example, the distribution of companies that used the Internet was the same for those who responded to the survey as for those who did not respond. The results of the non response survey that were used support the rejection of the hypothesis of a significant difference between the characteristics of respondents and of non respondents.

## Sampling error

The answers to questions presented in this paper are population estimates. They represent the percentage of enterprises in the industry that engaged in a particular activity or used a particular technology. The population estimates are generated using enterprise weights or probability weights. Enterprise weights are equivalent to the inverse of the sampling rate.

The sampling error attributable to this survey is related to the fact that the survey sample was drawn from a population from which many possible samples could have been drawn. Coefficients of variation are used to provide a guide as to the precision of the results. A quality indicator comprised of the combination of the coefficient of variation and the imputation rate is used to determine if an estimate is reliable or not. Only reliable estimates or estimates that have reliability indicators that fall within a certain threshold are published.

## Several questions and few estimates

This being the first attempt at the survey, several questions were asked on the questionnaire in an attempt to collect as broad a range of information as possible. Although there are several questions on the questionnaire, there are estimates for a subset of questions available in this working paper. For some questions on the questionnaire the response rates were very low and for these questions no estimates will be produced.

Response rates were very low for questions that attempted to obtain information about business to business and business to consumer electronic commerce. Questions about the proportion of e-commerce that was conducted with customers in the U.S., Canada and in other countries also had poor response rates. Questions pertaining to information about purchases using computer based networks and non-computer based networks were also poorly responded to in this survey. The questions that had very low response rates and for which estimates will not be produced are the following:

*D2 part 2 Amount of customer orders via the Internet with online payment*

*D3 In 1999, what percentage of customer orders received over the Internet in terms of dollar values were from individuals, business (including government) or information not available.*

*D4 In 1999, what percentage of customer orders received over the Internet in terms of dollar values were from the following clients: Canadian, United States, others, or information not available.*

*D5 In 1999, what percentage of the total number of customer orders received over the Internet were from the following clients: Canadian, United States, others, or Information not available.*

*E2 part 1 Total procurement (using both computer or other methods)*

*E2 part 2 Non computer network based or paper based procurement systems (e.g. phone, fax, mail, purchase orders)*

*E2 part 3 Computer based procurement systems (e.g. purchased using credit cards, online, Electronic Data Interchange (EDI) on proprietary networks or the Internet)*

*E4. What percentage of total Internet purchases /procurement in terms of dollar value were from the following suppliers Canadian, United States, others, or information not available.*

*E5. What percentage of the total number of Internet purchases /procurement were from the following suppliers Canadian, United States, others, or information not available.*

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# **APPENDIX**

## Appendix A.

### Percentage of employees with access to personal computers, e-mail and the Internet by industry group.

3 and 4 digit NAICS	INDUSTRY NAME	Percentage of employees with access to PC, workstation or terminal	Percentage of employees with access to e-mail	Percentage of employees with access to Internet
<b>Forestry, Logging and Support Activities</b>				
113	Forestry and Logging	37.0	10.0	12.9
115	Support Activities for Agriculture and Forestry	30.1	24.6	24.9
<b>Mining and Oil and Gas Extraction</b>				
211	Oil and Gas Extraction	94.4	81.0	68.5
2111	Oil and Gas Extraction	94.4	81.0	68.5
212	Mining (except Oil and Gas)	47.8	36.8	20.9
2121	Coal Mining	31.5	25.3	6.6
2122	Metal Ore Mining	62.2	50.0	30.7
2123	Non-Metallic Mineral Mining and Quarrying	31.3	16.9	13.4
213	Support Activities for Mining and Oil and Gas Extraction	40.2	28.7	24.9
<b>Utilities</b>				
221	Utilities	80.7	78.2	58.6
2211	Electric Power Generation, Transmission and Distribution	81.1	78.9	58.6
2212	Natural Gas Distribution	86.1	82.5	68.0
2213	Water, Sewage and Other Systems	59.1	49.1	41.7
<b>Manufacturing</b>				
311	Food Manufacturing	35.7	13.9	13.0
3111	Animal Food Manufacturing	57.3	27.0	20.9
3112	Grain and oilseed Milling	62.2	48.0	19.6
3113	Sugar and Confectionery Product Manufacturing	44.7	43.1	16.2
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	57.1	19.4	34.8
3115	Dairy Product Manufacturing	27.1	14.9	10.6
3116	Meat Product Manufacturing	25.5	8.8	4.7
3117	Seafood Product Preparation and Packaging	18.6	8.5	8.0
3118	Bakeries and Tortilla Manufacturing	43.1	11.3	4.6
3119	Other Food Manufacturing	35.1	16.6	15.3
312	Beverage and Tobacco Product Manufacturing	73.7	55.8	49.3
3121	Beverage Manufacturing	76.3	57.8	51.5
3122	Tobacco Manufacturing	42.7	33.1	24.4
313	Textile Mills	45.1	35.5	16.8
3131	Fibre, Yarn and Thread Mills	36.0	30.6	22.4
3132	Fabric Mills	54.2	44.8	14.2
3133	Textile and Fabric Finishing and Fabric Coating	31.4	19.7	19.3
314	Textile Product Mills	37.5	27.4	22.3
3141	Textile Furnishings Mills	32.9	24.0	18.0
3149	Other Textile Product Mills	42.6	31.2	27.1
315	Clothing Manufacturing	19.1	10.4	7.5
3151	Clothing Knitting Mills	23.0	10.3	7.0
3152	Cut and Sew Clothing Manufacturing	18.0	10.1	7.1

## Appendix A. (continued)

3 and 4 digit NAICS	INDUSTRY NAME	Percentage of employees with access to PC, workstation or terminal	Percentage of employees with access to e-mail	Percentage of employees with access to Internet
3159	Clothing Accessories and Other Clothing Manufacturing	30.1	18.2	16.6
316	Leather and Allied Product Manufacturing	39.5	21.8	22.0
321	Wood Product Manufacturing	28.8	15.5	9.3
3211	Sawmills and Wood Preservation	22.3	15.8	8.3
3212	Veneer, Plywood and Engineered Wood Product Manufacturing	32.4	17.6	9.6
3219	Other Wood Product Manufacturing	33.7	14.9	10.1
322	Paper Manufacturing	50.4	36.8	24.8
3221	Pulp, Paper and Paperboard Mills	61.6	42.4	20.8
3222	Converted Paper Product Manufacturing	42.1	32.7	27.8
323	Printing and Related Support Activities	51.7	32.1	27.9
324	Petroleum and Coal Products Manufacturing	64.6	56.0	41.8
3241	Petroleum and Coal Products Manufacturing	64.6	56.0	41.8
325	Chemical Manufacturing	72.6	57.5	41.8
3251	Basic Chemical Manufacturing	84.3	50.9	33.0
3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibres and Filaments Manufacturing	81.4	80.3	35.1
3253	Pesticide, Fertilizer and Other Agricultural Chemical Manufacturing	84.7	47.8	37.1
3254	Pharmaceutical and Medicine Manufacturing	78.7	73.5	61.7
3255	Paint, Coating and Adhesive Manufacturing	44.4	32.4	29.9
3256	Soap, Cleaning Compound and Toilet Preparation Manufacturing	57.4	40.6	33.5
3259	Other Chemical Product Manufacturing	79.2	60.5	27.0
326	Plastics and Rubber Product Manufacturing	45.6	32.1	22.5
3261	Plastic Product Manufacturing	46.1	33.0	23.9
3262	Rubber Product Manufacturing	42.3	26.7	13.7
327	Non-Metallic Mineral Product Manufacturing	37.1	21.3	14.8
3271	Clay Product and Refractory Manufacturing	51.4	42.7	41.4
3272	Glass and Glass Product Manufacturing	60.9	53.1	24.4
3273	Cement and Concrete Product Manufacturing	27.3	7.9	7.8
3274	Lime and Gypsum Product Manufacturing	35.5	20.1	17.2
3279	Other Non-Metallic Mineral Product Manufacturing	34.6	17.4	12.4
331	Primary Metal Manufacturing	57.8	43.9	15.8
3311	Iron and Steel Mills and Ferro-Alloy Manufacturing	78.3	63.5	14.8
3312	Steel Product Manufacturing from Purchased Steel	48.1	32.0	12.7
3313	Alumina and Aluminum Production and Processing	72.0	43.8	35.2
3314	Non-Ferrous Metal (except Aluminum) Production and Processing	41.5	35.0	13.3
3315	Foundries	32.3	17.9	15.9
332	Fabricated Metal Product Manufacturing	29.0	11.9	10.6
3321	Forging and Stamping	42.0	12.8	12.2
3322	Cutlery and Hand Tool Manufacturing	39.7	19.2	8.4
3323	Architectural and Structural Metals Manufacturing	29.5	11.5	11.7

## Appendix A. (continued)

3 and 4 digit NAICS	INDUSTRY NAME	Percentage of employees with access to PC, workstation or terminal	Percentage of employees with access to e-mail	Percentage of employees with access to Internet
3324	Boiler, Tank and Shipping Container Manufacturing	38.5	20.4	16.7
3325	Hardware Manufacturing	27.8	20.1	14.0
3326	Spring and Wire Product Manufacturing	45.3	21.5	16.9
3327	Machine Shops, Turned Product, and Screw, Nut and Bolt Manufacturing	20.3	6.5	6.8
3328	Coating, Engraving, Heat Treating and Allied Activities	13.5	7.5	5.7
3329	Other Fabricated Metal Product Manufacturing	43.1	26.0	18.8
333	Machinery Manufacturing	45.3	29.3	19.0
3331	Agricultural, Construction and Mining Machinery Manufacturing	50.7	35.6	23.3
3332	Industrial Machinery Manufacturing	47.5	31.3	23.8
3333	Commercial and Service Industry Machinery Manufacturing	48.7	41.2	17.4
3334	Ventilation, Heating, Air-Conditioning and Commercial Refrigeration Equipment Manufacturing	42.9	26.1	6.3
3335	Metalworking Machinery Manufacturing	50.6	24.2	20.5
3336	Engine, Turbine and Power Transmission Equipment Manufacturing	39.8	25.3	23.0
3339	Other General-Purpose Machinery Manufacturing	37.7	28.6	18.4
334	Computer and Electronic Product Manufacturing	77.3	72.8	56.3
3341	Computer and Peripheral Equipment Manufacturing	94.6	94.2	87.9
3342	Communications Equipment Manufacturing	83.1	70.8	75.3
3343	Audio and Video Equipment Manufacturing	86.9	82.8	81.9
3344	Semiconductor and Other Electronic Component Manufacturing	66.7	61.5	63.2
3345	Navigational, Measuring, Medical and Control Instruments Manufacturing	74.1	71.5	20.5
3346	Manufacturing and Reproducing Magnetic and Optical Media	75.6	62.7	65.8
335	Electrical Equipment, Appliance and Component Manufacturing	54.2	35.6	23.7
3351	Electric Lighting Equipment Manufacturing	34.6	30.7	10.3
3352	Household Appliance Manufacturing	42.6	36.0	18.1
3353	Electrical Equipment Manufacturing	68.7	46.1	37.9
3359	Other Electrical Equipment and Component Manufacturing	47.2	26.6	14.5
336	Transportation Equipment Manufacturing	45.2	32.0	19.0
3361	Motor Vehicle Manufacturing	35.1	30.5	16.0
3362	Motor Vehicle Body and Trailer Manufacturing	21.3	8.3	5.4
3363	Motor Vehicle Parts Manufacturing	41.7	32.5	16.1
3364	Aerospace Product and Parts Manufacturing	77.2	42.2	35.9
3365	Railroad Rolling Stock Manufacturing	42.6	25.6	25.7

## Appendix A. (continued)

3 and 4 digit NAICS	INDUSTRY NAME	Percentage of employees with access to PC, workstation or terminal	Percentage of employees with access to e-mail	Percentage of employees with access to Internet
3366	Ship and Boat Building	44.7	40.7	13.6
3369	Other Transportation Equipment Manufacturing	81.6	46.5	46.2
337	Furniture and Related Product Manufacturing	23.6	13.3	10.6
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	22.4	11.7	8.5
3372	Office Furniture (including Fixtures) Manufacturing	23.8	14.1	13.0
3379	Other Furniture-Related Product Manufacturing	32.5	21.6	17.1
339	Miscellaneous Manufacturing	43.3	26.7	23.2
3391	Medical Equipment and Supplies Manufacturing	39.3	20.0	18.5
3399	Other Miscellaneous Manufacturing	45.2	29.8	25.4
<b>Wholesale Trade</b>				
411	Farm Product Wholesaler-Distributors	46.3	14.2	13.8
412	Petroleum Product Wholesaler-Distributors	50.1	20.2	22.4
413	Food, Beverage and Tobacco Wholesaler-Distributors	47.1	24.4	18.1
414	Personal and Household Goods Wholesaler-Distributors	62.4	46.2	38.2
415	Motor Vehicle and Parts Wholesaler-Distributors	69.6	34.1	29.0
416	Building Material and Supplies Wholesaler-Distributors	91.0	66.0	62.8
417	Machinery, Equipment and Supplies Wholesaler-Distributors	86.1	73.2	51.5
418	Miscellaneous Wholesaler-Distributors	71.0	46.4	40.4
419	Wholesale Agents and Brokers	62.1	30.8	27.6
<b>Retail Trade</b>				
441	Motor Vehicle and Parts Dealers	68.2	19.5	13.0
442	Furniture and Home Furnishings Stores	58.0	12.7	13.4
443	Electronics and Appliance Stores	72.8	34.9	35.7
444	Building Material and Garden Equipment and Supplies Dealers	69.9	20.1	13.7
445	Food and Beverage Stores	30.4	16.9	8.6
446	Health and Personal Care Stores	62.0	21.7	15.6
447	Gasoline Stations	28.4	6.8	4.3
448	Clothing and Clothing Accessories Stores	59.0	23.9	10.4
451	Sporting Goods, Hobby, Book and Music Stores	67.4	34.1	26.3
452	General Merchandise Stores	62.3	2.6	4.6
453	Miscellaneous Store Retailers	58.6	26.0	22.5
454	Non-Store Retailers	45.9	22.0	18.9
<b>Transport and Warehousing</b>				
481	Air Transportation	68.3	51.2	45.7
482	Rail Transportation	45.0	30.9	13.6
483	Water Transportation	35.3	24.1	18.6
484	Truck Transportation	36.2	19.2	19.5
485	Transit and Ground Passenger Transportation	34.1	29.7	11.0
487	Scenic and Sightseeing Transportation	48.3	40.1	27.2
488	Support Activities for Transportation	35.4	12.4	10.0

## Appendix A. (continued)

3 and 4 digit NAICS	INDUSTRY NAME	Percentage of employees with access to PC, workstation or terminal	Percentage of employees with access to e-mail	Percentage of employees with access to Internet
491	Postal Service	14.4	9.9	9.4
492	Couriers and Messengers	78.1	27.7	29.4
493	Warehousing and Storage	72.9	69.0	11.9
<b>Information and Cultural Industries</b>				
511	Publishing Industries	88.8	77.8	70.4
512	Motion Picture and Sound Recording Industries	93.6	79.5	77.1
513	Broadcasting and Telecommunications	92.7	81.5	73.2
514	Information Services and Data Processing Services	77.7	71.5	62.0
<b>Finance and Insurance</b>				
521	Monetary Authorities - Central Bank	96.8	95.5	91.7
522	Credit Intermediation and Related Activities	97.9	92.4	63.7
523	Securities, Commodity Contracts, and Other Financial Investment and Related Activities	68.5	53.5	43.1
524	Insurance Carriers and Related Activities	90.4	67.1	40.1
526	Funds and Other Financial Vehicles	14.9	9.2	9.2
<b>Real Estate and Rental and Leasing</b>				
531	Real Estate	56.6	34.9	35.9
5311	Lessors of Real Estate	33.4	15.2	13.4
5313	Activities Related to Real Estate	78.6	53.5	44.6
532	Rental and Leasing Services	63.4	32.7	31.2
5321	Automotive Equipment Rental and Leasing	75.2	37.7	40.6
5322	Consumer Goods Rental	62.2	31.1	24.9
5323	General Rental Centres	49.6	13.5	10.2
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	63.8	37.2	39.8
<b>Professional, Scientific and Technical Services</b>				
541	Professional, Scientific and Technical Services	86.0	66.7	60.3
5411	Legal Services	85.6	55.4	43.7
5412	Accounting, Tax Preparation, Bookkeeping and Payroll Services	96.8	70.3	68.8
5413	Architectural, Engineering and Related Services	75.9	56.3	48.8
5414	Specialized Design Services	65.5	54.3	54.0
5415	Computer Systems Design and Related Services	99.4	98.2	92.7
5416	Management, Scientific and Technical Consulting Services	80.1	58.2	53.9
5417	Scientific Research and Development Services	90.5	73.1	73.5
5418	Advertising and Related Services	90.9	79.9	79.4
5419	Other Professional, Scientific and Technical Services	91.3	58.4	40.1
<b>Admin &amp; Support, Waste Management &amp; Remediation Services</b>				
561	Administrative and Support Services	56.8	40.4	35.3
562	Waste Management and Remediation Services	16.8	10.4	10.4



## Appendix A. (concluded)

3 and 4 digit NAICS	INDUSTRY NAME	Percentage of employees with access to PC, workstation or terminal	Percentage of employees with access to e-mail	Percentage of employees with access to Internet
<b>Educational Services Private</b>				
611	Educational Services	76.9	66.9	66.2
6111	Elementary and Secondary Schools	72.0	51.9	52.9
6112	Community Colleges and C.E.G.E.P.s	99.0	96.4	97.1
6113	Universities	78.7	57.1	54.7
6114	Business Schools and Computer and Management Training	98.4	96.9	96.1
6115	Technical and Trade Schools	69.0	46.0	47.2
6116	Other Schools and Instruction	69.9	66.2	64.8
6117	Educational Support Services	79.9	74.1	65.6
<b>Educational Services Public</b>				
611	Educational Services	93.2	90.3	90.1
6111	Elementary and Secondary Schools	99.5	99.5	99.5
6112	Community Colleges and C.E.G.E.P.s	92.8	89.5	89.6
6113	Universities	93.4	90.6	90.4
6116	Other Schools and Instruction	100.0	90.0	90.0
<b>Health Care and Social Assistance Private</b>				
621	Ambulatory Health Care Services	70.2	23.9	19.8
623	Nursing and Residential Care Facilities	37.5	11.4	15.6
624	Social Assistance	65.8	53.7	45.5
<b>Health Care and Social Assistance Public</b>				
622	Hospitals	62.1	42.0	26.7
623	Nursing and Residential Care Facilities	28.7	11.0	5.2
624	Social Assistance	100.0	100.0	100.0
<b>Arts, Entertainment and Recreation</b>				
711	Performing Arts, Spectator Sports and Related Industries	66.0	58.0	48.4
712	Heritage Institutions	63.8	45.5	39.6
713	Amusement, Gambling and Recreation Industries	43.5	20.3	17.1
<b>Accommodation and Food Services</b>				
721	Accommodation Services	31.6	14.9	12.2
722	Food Services and Drinking Places	30.2	6.3	5.9
<b>Other Serv (except Public Admin)</b>				
811	Repair and Maintenance	38.6	18.2	21.7
812	Personal and Laundry Services	31.1	6.3	5.4
813	Religious, Grant-Making, Civic, and Professional and Similar Organizations	79.1	63.8	61.4
<b>Public Administration</b>				
911	Federal Government Public Administration	97.0	97.0	81.7
912	Provincial and Territorial Public Administration	92.0	90.2	81.3
914	Aboriginal Public Administration	97.9	96.4	97.4

## Appendix B.

**TABLE 1. Non Internet users and their reasons for not using the Internet to purchase or to sell**

Industrial Sector		Goods and services we produce do not lend themselves to concluding transactions over the Internet	The Internet is too slow	Lack of skilled employees to develop, maintain and use technology	Prefer to maintain current business model	Security concerns	Already have significant investment in non-Internet network
Forestry, Logging and Support Activities*	Very important	63.8	4.9	3.8	43.4	27.6	16.4
	Important	9.4	9.9	27.8	24.7	15.6	8.7
	Not important	7.5	38.3	21.6	4.2	14.5	22.0
	Not applicable	19.3	47.0	46.8	27.7	42.3	52.9
Mining and Oil and Gas Extraction	Very important	53.2	4.6	12.9	24.7	26.7	8.0
	Important	14.4	7.2	16.5	26.1	19.1	16.5
	Not important	3.3	40.0	26.9	16.0	16.9	16.3
	Not applicable	29.2	48.1	43.6	33.1	37.3	59.1
Utilities	Very important	21.5	0.1	2.0	21.7	14.2	5.0
	Important	24.0	6.7	7.9	15.7	8.0	4.7
	Not important	24.3	30.5	30.7	12.9	29.2	19.2
	Not applicable	30.2	62.7	59.4	49.7	48.6	71.1
Manufacturing	Very important	34.2	3.8	8.7	35.0	25.0	8.0
	Important	21.0	16.9	25.3	29.6	27.5	19.0
	Not important	23.2	37.2	30.2	13.3	19.7	26.8
	Not applicable	21.6	42.2	35.7	22.1	27.9	46.2
Wholesale Trade	Very important	29.9	5.0	6.4	29.6	21.9	9.2
	Important	17.2	9.8	22.6	33.3	25.4	23.5
	Not important	23.8	38.7	28.7	16.5	21.4	23.2
	Not applicable	29.1	46.5	42.2	20.6	31.4	44.1
Retail Trade	Very important	24.3	7.5	8.3	35.9	20.2	8.5
	Important	16.5	14.1	26.3	30.8	28.5	18.7
	Not important	18.7	32.5	21.9	6.1	17.3	16.4
	Not applicable	40.5	45.8	43.5	27.2	33.9	56.4
Transport and Warehousing	Very important	36.3	4.9	5.4	31.5	15.8	4.7
	Important	11.6	9.6	17.7	20.3	16.1	11.1
	Not important	15.9	33.2	23.6	13.6	23.1	30.0
	Not applicable	36.2	52.3	53.4	34.5	44.9	54.2
Information and Cultural Industries	Very important	38.0	8.7	13.5	41.0	25.2	4.4
	Important	6.7	3.5	18.8	17.2	11.5	6.3
	Not important	29.1	48.4	27.1	17.7	27.3	28.1
	Not applicable	26.2	39.5	40.6	24.2	36.0	61.2
Finance and Insurance	Very important	32.3	4.0	12.3	38.4	44.7	15.4
	Important	21.5	12.5	6.7	20.1	14.9	17.3
	Not important	24.7	34.0	37.3	13.4	13.9	25.6
	Not applicable	21.5	49.5	43.7	28.1	26.5	41.6
Real Estate and Rental and Leasing	Very important	49.5	4.2	1.3	22.4	18.0	1.4
	Important	12.0	4.6	18.7	25.0	12.4	12.4
	Not important	9.4	24.7	23.2	12.3	16.4	24.8
	Not applicable	29.1	66.4	56.8	40.2	53.3	61.3
Professional, Scientific and Technical Services	Very important	41.7	4.6	5.9	38.5	28.4	6.4
	Important	14.8	10.4	15.0	18.1	13.2	11.6
	Not important	11.2	32.2	25.5	12.2	15.8	22.3
	Not applicable	32.3	52.8	53.6	31.2	42.6	59.8

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999

**TABLE 1. (concluded)**

Industrial Sector		Goods and services we produce do not lend themselves to concluding transactions over the Internet	The Internet is too slow	Lack of skilled employees to develop, maintain and use technology	Prefer to maintain current business model	Security concerns	Already have significant investment in non-Internet network
Management of Companies & Enterprises	Very important	22.1	0.0	1.2	17.3	12.9	1.3
	Important	13.2	11.2	5.1	10.0	19.4	11.5
	Not important	7.8	14.4	17.6	7.8	5.4	9.1
	Not applicable	56.9	74.4	76.2	64.9	62.3	78.0
Admin & Support, Waste Management & Remediation Services	Very important	23.5	7.7	8.9	37.5	19.2	3.5
	Important	29.7	11.4	18.3	22.2	19.2	20.2
	Not important	17.2	24.5	13.9	4.9	18.8	20.7
	Not applicable	29.5	56.4	58.9	35.3	42.9	55.7
Educational Services Private	Very important	31.4	1.6	2.8	37.9	12.2	11.3
	Important	13.7	5.0	18.4	18.8	25.5	9.8
	Not important	13.4	35.8	22.5	5.4	13.9	22.3
	Not applicable	41.5	57.5	56.3	38.0	48.3	56.5
Health Care and Social Assistance Private	Very important	48.3	2.1	6.2	31.6	17.8	6.5
	Important	12.1	5.3	13.7	18.1	12.2	16.7
	Not important	8.7	22.4	16.0	5.8	13.9	15.7
	Not applicable	30.8	70.3	64.0	44.5	56.1	61.0
Arts, Entertainment and Recreation	Very important	27.4	0.0	4.7	31.9	8.2	4.6
	Important	13.4	4.5	17.6	20.7	21.2	10.5
	Not important	17.6	43.1	31.7	18.8	26.8	30.8
	Not applicable	41.6	52.4	46.0	28.6	43.8	54.0
Accommodation and Food Services	Very important	31.6	8.2	6.2	32.8	8.6	5.7
	Important	15.5	12.6	12.7	23.0	20.1	7.9
	Not important	17.1	21.4	20.9	8.7	23.9	25.8
	Not applicable	35.9	57.9	60.2	35.5	47.5	60.6
Other Services (except Public Admin)	Very important	29.7	1.9	6.5	26.7	11.0	4.9
	Important	12.5	6.3	17.0	15.4	12.0	7.4
	Not important	9.6	21.8	11.8	4.8	15.0	15.0
	Not applicable	48.2	70.1	64.7	53.1	61.9	72.8
<b>All Private Sector</b>	<b>Very important</b>	<b>35.3</b>	<b>4.5</b>	<b>6.6</b>	<b>32.9</b>	<b>21.3</b>	<b>6.9</b>
	<b>Important</b>	<b>15.8</b>	<b>10.0</b>	<b>17.9</b>	<b>22.7</b>	<b>18.2</b>	<b>14.4</b>
	<b>Not important</b>	<b>15.5</b>	<b>30.4</b>	<b>23.3</b>	<b>10.4</b>	<b>17.5</b>	<b>21.6</b>
	<b>Not applicable</b>	<b>33.5</b>	<b>55.1</b>	<b>52.2</b>	<b>34.0</b>	<b>43.0</b>	<b>57.1</b>
Educational Services Public	Very important	17.4	3.0	8.4	10.8	29.3	3.0
	Important	32.5	13.8	40.3	36.6	42.2	21.1
	Not important	21.6	47.6	26.6	32.6	8.4	39.6
	Not applicable	28.5	35.5	24.7	20.0	20.0	36.2
Health Care and Social Assistance Public	Very important	40.2	2.7	6.0	16.3	27.7	4.9
	Important	7.2	14.7	20.7	21.8	20.2	13.0
	Not important	7.6	27.8	22.8	16.8	11.4	31.0
	Not applicable	45.1	54.8	50.5	45.1	40.7	51.0
Public Administration	Very important	44.6	1.8	2.5	12.1	24.0	13.9
	Important	18.0	5.8	16.7	12.9	30.8	23.2
	Not important	5.3	33.4	28.3	32.2	12.8	20.1
	Not applicable	32.1	59.0	52.4	42.8	32.4	42.9
<b>All Public Sector</b>	<b>Very important</b>	<b>37.0</b>	<b>2.6</b>	<b>5.8</b>	<b>14.6</b>	<b>27.3</b>	<b>6.1</b>
	<b>Important</b>	<b>13.5</b>	<b>13.0</b>	<b>23.4</b>	<b>22.8</b>	<b>25.9</b>	<b>16.2</b>
	<b>Not important</b>	<b>9.6</b>	<b>32.2</b>	<b>24.4</b>	<b>22.3</b>	<b>11.1</b>	<b>30.6</b>
	<b>Not applicable</b>	<b>39.9</b>	<b>52.2</b>	<b>46.4</b>	<b>40.3</b>	<b>35.7</b>	<b>47.0</b>

## Appendix B.

**TABLE 2. Internet users and their reasons for not using the Internet to purchase or to sell**

Industrial Sector		Goods and services we produce do not lend themselves to concluding transactions over the Internet	The Internet is too slow	Lack of skilled employees to develop, maintain and use technology	Prefer to maintain current business model	Security concerns	Already have significant investment in non-Internet network
Forestry, Logging and Support Activities*	Very important	32.0	2.6	4.4	25.6	13.8	1.6
	Important	4.7	1.6	9.3	14.2	3.2	1.8
	Not important	9.4	22.4	12.1	5.9	17.6	17.4
	Not applicable	53.9	73.4	74.3	54.3	65.5	79.1
Mining and Oil and Gas Extraction	Very important	22.2	7.9	9.5	35.1	15.8	2.9
	Important	8.0	0.9	16.0	6.8	11.0	3.4
	Not important	13.9	18.1	13.3	14.9	17.9	13.8
	Not applicable	55.9	73.0	61.2	43.3	55.3	79.8
Utilities	Very important	7.3	0.9	0.0	7.8	0.9	0.0
	Important	5.9	5.7	3.5	11.5	9.8	6.6
	Not important	11.5	2.3	9.8	4.1	8.1	2.3
	Not applicable	75.4	91.0	86.6	76.7	81.2	91.0
Manufacturing	Very important	17.8	3.3	8.5	35.8	13.1	4.6
	Important	18.6	6.1	19.0	24.1	18.3	11.4
	Not important	23.4	27.1	18.9	8.9	22.4	19.5
	Not applicable	40.1	63.5	53.6	31.3	46.1	64.4
Wholesale Trade	Very important	20.4	4.0	7.4	36.9	12.7	6.0
	Important	16.2	5.0	22.6	21.5	11.9	14.9
	Not important	18.0	33.7	24.8	15.3	26.3	30.5
	Not applicable	45.4	57.3	45.2	26.3	49.1	48.6
Retail Trade	Very important	15.8	2.0	10.8	39.4	16.7	8.3
	Important	12.0	8.6	19.6	15.2	14.4	13.5
	Not important	17.3	20.6	12.6	7.1	15.7	14.6
	Not applicable	55.0	68.8	57.0	38.3	53.1	63.6
Transport and Warehousing	Very important	14.9	1.7	4.8	26.5	10.2	3.3
	Important	7.1	3.3	7.7	11.3	5.4	4.8
	Not important	11.2	18.5	12.5	6.9	14.5	13.8
	Not applicable	66.9	76.5	75.0	55.3	69.9	78.0
Information and Cultural Industries	Very important	21.9	0.2	0.0	0.0	12.7	2.1
	Important	11.9	0.0	4.2	23.7	4.2	0.0
	Not important	20.4	32.3	28.1	10.7	17.5	32.3
	Not applicable	45.9	67.5	67.7	65.6	65.6	65.6
Finance and Insurance	Very important	20.3	4.3	7.6	32.0	26.3	3.3
	Important	15.9	16.8	14.2	17.6	17.7	10.1
	Not important	20.5	19.5	23.7	10.7	7.3	20.4
	Not applicable	43.3	59.4	54.5	39.7	48.7	66.2
Real Estate and Rental and Leasing	Very important	27.1	1.4	2.4	27.5	3.4	3.3
	Important	6.0	1.1	6.9	8.6	11.0	7.2
	Not important	7.8	20.5	13.5	5.7	13.7	13.9
	Not applicable	59.1	77.0	77.2	58.1	71.9	75.6
Professional, Scientific and Technical Services	Very important	26.8	3.5	9.8	28.7	14.3	6.2
	Important	4.9	5.6	8.6	14.0	12.3	10.7
	Not important	15.9	24.7	21.9	7.6	14.1	16.4
	Not applicable	52.4	66.1	59.7	49.6	59.2	66.7

\* NAICS 113, forestry and logging and NAICS 115, support activities for agriculture and forestry are included in forestry, logging and support activities.

Estimates are weighted by revenue for the private sector and by the number of employees for the public sector.

Source: Information and Communications Technologies and Electronic Commerce Survey, 1999

**TABLE 2. (concluded)**

Industrial Sector		Goods and services we produce do not lend themselves to concluding transactions over the Internet	The Internet is too slow	Lack of skilled employees to develop, maintain and use technology	Prefer to maintain current business model	Security concerns	Already have significant investment in non-Internet network
Management of Companies & Enterprises	Very important	12.5	0.0	0.0	20.3	13.0	3.7
	Important	10.0	0.6	8.2	4.5	5.8	6.5
	Not important	6.5	9.7	3.8	1.4	4.0	3.5
	Not applicable	71.1	89.7	88.0	73.9	77.2	86.3
Admin & Support, Waste Management & Remediation Services	Very important	18.7	3.2	10.2	30.0	9.9	6.4
	Important	2.9	3.3	6.9	14.1	10.2	4.5
	Not important	15.5	14.7	11.6	1.7	9.4	12.1
	Not applicable	62.9	78.8	71.4	54.1	70.6	77.0
Educational Services Private	Very important	24.8	2.8	0.5	29.4	9.1	2.7
	Important	12.5	9.3	6.9	12.6	9.8	4.0
	Not important	11.4	16.8	17.3	5.8	17.5	16.7
	Not applicable	51.4	71.1	75.4	52.2	63.6	76.6
Health Care and Social Assistance Private	Very important	35.0	2.0	3.7	40.2	16.5	6.5
	Important	9.5	5.5	10.3	8.8	13.8	7.2
	Not important	6.9	21.4	21.7	8.6	13.6	18.6
	Not applicable	48.6	71.1	64.3	42.4	56.1	67.7
Arts, Entertainment and Recreation	Very important	23.7	0.0	2.6	29.5	2.3	5.8
	Important	7.4	2.0	10.0	19.2	7.4	5.4
	Not important	9.2	9.5	8.3	4.1	10.4	5.6
	Not applicable	59.6	88.5	79.1	47.2	79.9	83.2
Accommodation and Food Services	Very important	25.8	1.7	4.5	26.2	7.0	0.6
	Important	6.6	5.8	7.9	11.2	11.9	5.8
	Not important	7.2	15.9	12.8	7.7	15.0	13.8
	Not applicable	60.5	76.6	74.8	54.8	66.0	79.9
Other Services (except Public Admin)	Very important	21.1	0.5	3.4	28.3	7.2	3.5
	Important	8.4	4.4	11.6	17.4	9.0	6.9
	Not important	8.7	17.8	12.1	4.5	16.9	13.7
	Not applicable	61.8	77.3	72.9	49.9	66.9	75.8
<b>All Private Sector</b>	<b>Very important</b>	<b>21.9</b>	<b>2.1</b>	<b>6.3</b>	<b>31.7</b>	<b>11.8</b>	<b>4.8</b>
	<b>Important</b>	<b>9.5</b>	<b>5.4</b>	<b>12.5</b>	<b>14.3</b>	<b>11.6</b>	<b>8.7</b>
	<b>Not important</b>	<b>12.8</b>	<b>20.3</b>	<b>15.1</b>	<b>7.1</b>	<b>15.4</b>	<b>15.7</b>
	<b>Not applicable</b>	<b>55.9</b>	<b>72.2</b>	<b>66.1</b>	<b>46.8</b>	<b>61.2</b>	<b>70.8</b>
Educational Services Public	Very important	0.0	0.0	0.0	0.0	0.0	0.0
	Important	0.0	0.0	0.0	0.0	100.0	100.0
	Not important	0.0	100.0	0.0	0.0	0.0	0.0
	Not applicable	100.0	0.0	100.0	100.0	0.0	0.0
Health Care and Social Assistance Public	Very important	43.5	8.7	4.3	26.0	26.1	17.4
	Important	8.7	4.4	47.8	30.5	21.7	8.7
	Not important	8.7	34.8	17.4	21.7	26.1	30.4
	Not applicable	39.1	52.2	30.5	21.7	26.1	43.5
Public Administration	Very important	0.0	0.0	74.1	25.9	0.0	0.0
	Important	0.0	0.0	25.9	0.0	100.0	25.9
	Not important	0.0	0.0	0.0	0.0	0.0	74.1
	Not applicable	100.0	100.0	0.0	74.1	0.0	0.0
<b>All Public Sector</b>	<b>Very important</b>	<b>38.0</b>	<b>7.6</b>	<b>9.9</b>	<b>24.9</b>	<b>22.8</b>	<b>15.2</b>
	<b>Important</b>	<b>7.6</b>	<b>3.8</b>	<b>43.9</b>	<b>26.6</b>	<b>31.6</b>	<b>14.1</b>
	<b>Not important</b>	<b>7.6</b>	<b>34.8</b>	<b>15.2</b>	<b>19.0</b>	<b>22.8</b>	<b>32.7</b>
	<b>Not applicable</b>	<b>46.8</b>	<b>53.8</b>	<b>31.0</b>	<b>29.5</b>	<b>22.8</b>	<b>38.0</b>



PLEASE UPDATE ABOVE INFORMATION IF NECESSARY

1	Name of business		
2	Address		
3	City	5 Province	6 Postal Code
4	Telephone Number		

#### SURVEY OBJECTIVE

The objective of this survey is to collect information that the Canadian Statistical System does not already have about the use of Information and Communications Technologies and Electronic Commerce for all types of Canadian business. The information will be used to measure the connectedness of Canadian business and the usage of electronic commerce and telecommunications by province, industry and firm size. Both firms that use the technologies and those that do not use them will be surveyed. The differences and similarities between users and non-users of the technologies are important to us. Even if you do not use the technologies, your responses are important to us.

Please complete a questionnaire for the operation(s) and location(s) described on the address label above.

#### REPORTING PERIOD

**For the purpose of this survey, please report information for your 12 month fiscal period** for which the FINAL DAY occurs on or between January 1, 1999 and December 31, 1999. If the 12 month fiscal period is not yet complete, please provide your best estimate for the balance of the year.

#### CONFIDENTIALITY

Statistics Canada is prohibited by law from publishing any statistics which would divulge information obtained from this survey that relates to any identifiable business, institution or individual without the previous written consent of that business, institution or individual. The data reported on this questionnaire will be treated in strict confidence, used for statistical purposes and published in aggregate form only. The confidentiality provisions of the **Statistics Act** are not affected by either the **Access to Information Act** or any other legislation.

**Please complete and return this questionnaire within 10 days of receipt**

**If you require assistance in the completion of the questionnaire or have any questions regarding the survey, please refer to Reporting Guide and Definitions or contact:**

Investment and Capital Stock Division  
Statistics Canada  
Tunney's Pasture  
Ottawa, Ontario  
K1A 0T6  
Phone: (613) 951-9815 1-800-345-2294  
Fax: (613) 951-0196 1-800-606-5393

**Section A - Use of Information and Communications Technologies**

**Please answer Section A**

**A1.** For each of the items listed, please indicate if your organization currently uses or plans to use the following:

	Use	Plan to use within one year	Plan to use after one year	No plans to use
1. personal computers, workstations or terminals	201 <input type="radio"/>	211 <input type="radio"/>	221 <input type="radio"/>	231 <input type="radio"/>
2. cellular or PCS (Personal Communications Services) telephones*	202 <input type="radio"/>	212 <input type="radio"/>	222 <input type="radio"/>	232 <input type="radio"/>
3. E-mail (electronic mail)* (refer to Reporting Guide and Definitions)	203 <input type="radio"/>	213 <input type="radio"/>	223 <input type="radio"/>	233 <input type="radio"/>
4. company computer networks, Local Area Network (LAN) or Wide Area Network (WAN)	204 <input type="radio"/>	214 <input type="radio"/>	224 <input type="radio"/>	234 <input type="radio"/>
5. Internet / WWW	205 <input type="radio"/>	215 <input type="radio"/>	225 <input type="radio"/>	235 <input type="radio"/>
6. Intranet (an internal company communications network using the same protocol as the Internet allowing communication within an organization)	206 <input type="radio"/>	216 <input type="radio"/>	226 <input type="radio"/>	236 <input type="radio"/>
7. Extranet (a secure extension of an Intranet that allows external users to access some parts of an organization's Intranet)	207 <input type="radio"/>	217 <input type="radio"/>	227 <input type="radio"/>	237 <input type="radio"/>
8. Electronic Funds Transfer (EFT)*	208 <input type="radio"/>	218 <input type="radio"/>	228 <input type="radio"/>	238 <input type="radio"/>
9. EDI* (Electronic Data Interchange) on the Internet	209 <input type="radio"/>	219 <input type="radio"/>	229 <input type="radio"/>	239 <input type="radio"/>
10. EDI* (Electronic Data Interchange) <b>not</b> on the Internet	210 <input type="radio"/>	220 <input type="radio"/>	230 <input type="radio"/>	240 <input type="radio"/>

**A2.** What percentage of your employees have access to:

Personal computers, workstations or terminals	300 <input type="text"/>	%	E-mail*	301 <input type="text"/>	%	Internet / WWW	302 <input type="text"/>	%
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**Section B - Internet Users** **Please answer if you use the Internet, otherwise go to Section E**

**B1.** What is the total external bandwidth your organization uses to access the Internet? (Kbps=kilobits per second, Mbps=megabits per second)

1. typical telephone connection with standard modem (64 Kbps or less)	401 <input type="radio"/>
2. up to and including a T1* line (greater than 64 Kbps and up to 1.544 Mbps)	402 <input type="radio"/>
3. greater than a T1* line and up to and including a T3* line (greater than 1.544 Mbps and up to 44.736 Mbps)	403 <input type="radio"/>
4. greater than a T3* line (greater than 44.736 Mbps)	404 <input type="radio"/>
5. do not know	405 <input type="radio"/>

**B2.** Please indicate whether or not your organization uses the Internet for the following purposes and in the third column indicate those purposes which are the most valuable to your organization.

	501 <input type="radio"/> yes	551 <input type="radio"/> no	Purposes most valuable for your organization
1. information searches	501 <input type="radio"/>	551 <input type="radio"/>	411 <input type="radio"/>
2. E-mail (electronic mail)* (including text messages excluding attachments)	502 <input type="radio"/>	552 <input type="radio"/>	412 <input type="radio"/>
3. exchanging electronic files (include attaching documents using E-mail software)	503 <input type="radio"/>	553 <input type="radio"/>	413 <input type="radio"/>
4. to access databases of suppliers	504 <input type="radio"/>	554 <input type="radio"/>	414 <input type="radio"/>
5. to access databases of customers	505 <input type="radio"/>	555 <input type="radio"/>	415 <input type="radio"/>
6. to share or perform collaborative research and development	506 <input type="radio"/>	556 <input type="radio"/>	416 <input type="radio"/>
7. education / training (interactive access to course materials online)	507 <input type="radio"/>	557 <input type="radio"/>	417 <input type="radio"/>
8. to automate or eliminate steps in production and/or distribution with suppliers	508 <input type="radio"/>	558 <input type="radio"/>	418 <input type="radio"/>
9. to automate or eliminate steps in production and/or distribution with customers	509 <input type="radio"/>	559 <input type="radio"/>	419 <input type="radio"/>
10. advertising / marketing	510 <input type="radio"/>	560 <input type="radio"/>	420 <input type="radio"/>
11. purchasing goods or services	511 <input type="radio"/>	561 <input type="radio"/>	421 <input type="radio"/>
12. selling goods or services (not necessarily concluding the transactions online)	512 <input type="radio"/>	562 <input type="radio"/>	422 <input type="radio"/>

**B3.** Has using the Internet replaced another technology or medium of advertising that was previously used by your organization? 701

513  yes    563  no    *If yes, what technologies were replaced?* \_\_\_\_\_

**B4.** Do you have a Web site? *If yes, please answer Section C* <sup>514</sup>  yes    *If no, please answer Section D* <sup>564</sup>  no

**Section C - Internet Web Site** **Please answer Section C if you have an Internet Web site**

**C1.** Please indicate whether or not your Internet Web site offers the following:

1. online payments	515 <input type="radio"/> yes	565 <input type="radio"/> no
2. distribution of online services or digital products (e.g. help menus, games, music, software, etc.)	516 <input type="radio"/> yes	566 <input type="radio"/> no
3. after sales service (e.g. a function allowing customer feedback)	517 <input type="radio"/> yes	567 <input type="radio"/> no
4. tracking of orders	518 <input type="radio"/> yes	568 <input type="radio"/> no
5. information about the company (e.g. annual reports)	519 <input type="radio"/> yes	569 <input type="radio"/> no
6. product or service information	520 <input type="radio"/> yes	570 <input type="radio"/> no
7. a list or catalogue of available goods or services	521 <input type="radio"/> yes	571 <input type="radio"/> no
8. customized service for clients (e.g. customized presentation of product preferences)	522 <input type="radio"/> yes	572 <input type="radio"/> no
9. capability to provide secure transactions (e.g. firewalls or secure servers)	523 <input type="radio"/> yes	573 <input type="radio"/> no
10. privacy policy statement	524 <input type="radio"/> yes	574 <input type="radio"/> no
11. information about employment opportunities	525 <input type="radio"/> yes	575 <input type="radio"/> no

**C2.** Do you contract out to people outside of your organization for the creation, maintenance or upgrading of your Internet Web site? 526  yes    576  no

**C3.**

	\$0	\$1 to \$4,999	\$5,000 to \$9,999	\$10,000 to \$19,999	\$20,000 to \$99,999	\$100,000 to \$499,999	\$500,000 and over
1. What was the approximate cost of setting up your Internet Web site (including salaries) in 1999 (in \$)?	423 <input type="radio"/>	424 <input type="radio"/>	425 <input type="radio"/>	426 <input type="radio"/>	427 <input type="radio"/>	428 <input type="radio"/>	429 <input type="radio"/>
2. What was the approximate cost of maintaining/upgrading your Internet Web site (including salaries) in 1999 (in \$)?	430 <input type="radio"/>	431 <input type="radio"/>	432 <input type="radio"/>	433 <input type="radio"/>	434 <input type="radio"/>	435 <input type="radio"/>	436 <input type="radio"/>

\* Please refer to Reporting Guide and Definitions

**Section C - Internet Web Site**

**Please answer Section C if you have a Web site - Continued**

- C4. What is your organization's primary Uniform Resource Locator (URL) or Internet Web page address? (e.g., the URL for Statistics Canada is <http://www.statcan.ca>). Provide the primary URL for your affiliate or parent company if there is no URL for your organization. 702  
 http:// \_\_\_\_\_
- C5. Can your goods and/or services be ordered on the Internet with or without online payment?  
 If yes, please answer Section D <sup>528</sup>  yes      If no, please answer Section E <sup>578</sup>  no

**Section D - Internet Commerce - Selling**

**Please answer if your goods or services can be ordered over the Internet**

**Please refer to the fiscal year ending in 1999. If exact numbers are not readily available, provide your best estimate.**

- D1. What percentage of the complete range of your organization's goods and/or services can be ordered using the Internet Web site?  
 0% <sup>406</sup>       Greater than 0% and less than 34% <sup>407</sup>       34% to 66% <sup>408</sup>       67% to 99% <sup>409</sup>       100% <sup>410</sup>
- D2. In 1999, what was the value of customer orders of goods and services that your organization received over the Internet? (in thousands \$)  
 1. Total customer orders via the Internet\* with or without online payment <sup>601</sup> \$ \_\_\_\_\_  
 2. Amount of customer orders via the Internet\* with online payment <sup>602</sup> \$ \_\_\_\_\_
- D3. In 1999, what percentage of customer orders received over the Internet in terms of dollar values were from:  
 Individuals <sup>303</sup> \_\_\_\_\_ %      Business (including governments) <sup>304</sup> \_\_\_\_\_ %      Information not available <sup>437</sup>
- D4. In 1999, what percentage of customer orders received over the Internet in terms of dollar values were from the following clients:  
 Canadian <sup>305</sup> \_\_\_\_\_ %      United States <sup>306</sup> \_\_\_\_\_ %      Others <sup>307</sup> \_\_\_\_\_ %      Information not available <sup>438</sup>
- D5. In 1999, what percentage of the total number of customer orders received over the Internet were from the following clients:  
 Canadian <sup>308</sup> \_\_\_\_\_ %      United States <sup>309</sup> \_\_\_\_\_ %      Others <sup>310</sup> \_\_\_\_\_ %      Information not available <sup>439</sup>

**Section E - Purchases / Procurement**

**Please refer to the fiscal year ending in 1999. If exact numbers are not readily available, provide your best estimate (in thousands \$)**

- E1. Total operating revenue for the fiscal year ending in 1999\* <sup>603</sup> \$ \_\_\_\_\_
- E2. Please indicate the value of goods and services purchased, in 1999, via different procurement systems:
- |   |                   |
|---|-------------------|
| 1. Total procurement (using both computer and other methods)  | <sup>604</sup> \$ |
| 2. Non computer network based or paper based procurement systems (e.g. phone, fax, mail, purchase orders)   | <sup>605</sup> \$ |
| 3. Computer based procurement systems (e.g. purchases using credit cards online, Electronic Data Interchange (EDI) on proprietary networks or the Internet) | <sup>606</sup> \$ |
- E3. Does your organization use the Internet to purchase inputs such as goods or services that are essential to your business?  
 If yes, please answer next 2 questions only <sup>529</sup>  yes      If no, please answer Section F <sup>579</sup>  no
- E4. What percentage of total Internet purchases/procurement in terms of dollar value were from the following suppliers:  
 Canadian <sup>311</sup> \_\_\_\_\_ %      United States <sup>312</sup> \_\_\_\_\_ %      Others <sup>313</sup> \_\_\_\_\_ %      Information not available <sup>440</sup>
- E5. What percentage of the total number of Internet purchases/procurement were from the following suppliers:  
 Canadian <sup>314</sup> \_\_\_\_\_ %      United States <sup>315</sup> \_\_\_\_\_ %      Others <sup>316</sup> \_\_\_\_\_ %      Information not available <sup>441</sup>

**Section F - Non users of Internet Commerce**

**Please answer Section F if you don't buy or sell goods or services over the Internet**

- F1. Please rate the importance of the following factors in the reasons your organization does not buy or sell goods over the Internet.
- |   | Very important                       | Important                            | Not important                        | Not applicable                       |
|---|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| 1. goods or services we produce do not lend themselves to concluding transactions over the Internet | <sup>241</sup> <input type="radio"/> | <sup>261</sup> <input type="radio"/> | <sup>281</sup> <input type="radio"/> | <sup>451</sup> <input type="radio"/> |
| 2. uncertain about the benefits of using the technology   | <sup>242</sup> <input type="radio"/> | <sup>262</sup> <input type="radio"/> | <sup>282</sup> <input type="radio"/> | <sup>452</sup> <input type="radio"/> |
| 3. cost of maintenance is too high  | <sup>243</sup> <input type="radio"/> | <sup>263</sup> <input type="radio"/> | <sup>283</sup> <input type="radio"/> | <sup>453</sup> <input type="radio"/> |
| 4. cost of technology is too high   | <sup>244</sup> <input type="radio"/> | <sup>264</sup> <input type="radio"/> | <sup>284</sup> <input type="radio"/> | <sup>454</sup> <input type="radio"/> |
| 5. potential for fraud and related costs  | <sup>245</sup> <input type="radio"/> | <sup>265</sup> <input type="radio"/> | <sup>285</sup> <input type="radio"/> | <sup>455</sup> <input type="radio"/> |
| 6. security concerns (e.g. concerns of undetected or unauthorized data changes)                     | <sup>246</sup> <input type="radio"/> | <sup>266</sup> <input type="radio"/> | <sup>286</sup> <input type="radio"/> | <sup>456</sup> <input type="radio"/> |
| 7. already have significant investment in non-Internet network                                      | <sup>247</sup> <input type="radio"/> | <sup>267</sup> <input type="radio"/> | <sup>287</sup> <input type="radio"/> | <sup>457</sup> <input type="radio"/> |
| 8. concern about competitors analyzing company information (e.g. prices)                            | <sup>248</sup> <input type="radio"/> | <sup>268</sup> <input type="radio"/> | <sup>288</sup> <input type="radio"/> | <sup>458</sup> <input type="radio"/> |
| 9. resistance to technological change by people in your organization                                | <sup>249</sup> <input type="radio"/> | <sup>269</sup> <input type="radio"/> | <sup>289</sup> <input type="radio"/> | <sup>459</sup> <input type="radio"/> |
| 10. the Internet is too slow  | <sup>250</sup> <input type="radio"/> | <sup>270</sup> <input type="radio"/> | <sup>290</sup> <input type="radio"/> | <sup>460</sup> <input type="radio"/> |
| 11. the Internet is not reliable  | <sup>251</sup> <input type="radio"/> | <sup>271</sup> <input type="radio"/> | <sup>291</sup> <input type="radio"/> | <sup>461</sup> <input type="radio"/> |
| 12. customers are not ready to use Internet Commerce  | <sup>252</sup> <input type="radio"/> | <sup>272</sup> <input type="radio"/> | <sup>292</sup> <input type="radio"/> | <sup>462</sup> <input type="radio"/> |
| 13. lack of skilled employees to develop, maintain and use technology                               | <sup>253</sup> <input type="radio"/> | <sup>273</sup> <input type="radio"/> | <sup>293</sup> <input type="radio"/> | <sup>463</sup> <input type="radio"/> |
| 14. prefer to maintain current business model (e.g. face to face interaction)                       | <sup>254</sup> <input type="radio"/> | <sup>274</sup> <input type="radio"/> | <sup>294</sup> <input type="radio"/> | <sup>464</sup> <input type="radio"/> |
| 15. uncertain about domestic or foreign laws pertaining to Internet use for business                | <sup>255</sup> <input type="radio"/> | <sup>275</sup> <input type="radio"/> | <sup>295</sup> <input type="radio"/> | <sup>465</sup> <input type="radio"/> |

\* Please refer to Reporting Guide and Definitions

If you have questions, telephone 1-800-345-2294 or Fax 1-800-606-5393

Name (please print) \_\_\_\_\_ job title \_\_\_\_\_ telephone # ( ) \_\_\_\_\_



# Reporting Guide & Definitions

Information and Communications Technologies and Electronic Commerce Questionnaire

If exact numbers are not available, please provide your best estimates.

All dollar values must be reported in Canadian dollars and expressed as thousands of dollars unless otherwise specified.

Please complete this questionnaire for the operations of your organization only. Exclude transactions performed on your organization's behalf by others. Answers to the questions should reflect the operations as defined by the label on the front of the questionnaire.

Please provide your suggestions for any part of this questionnaire in the Comments section of the survey.

\*The definitions below refer to the items in the questionnaire marked with \*

### Amount of customer orders via the Internet with online payment

The value of your organization's goods or services that were sold over the Internet includes all orders that were placed over the Internet and paid for over the Internet with the financial transaction concluded on the Internet. For example, this would exclude purchases of goods or services ordered or requested over the Internet and paid for by telephone. (D2 2).

### Cellular or PCS telephone

Cellular telephones and **PCS Personal Communications Services** provide mobile access to the wireline PSTN (public switched telephone network). **PCS** is a telecommunication system using digital transmission technology and frequencies in the 1900 MHz (megahertz), while Cellular uses either analogue or digital transmission technology with radio frequencies in the 800 MHz frequency band.( A1 2).

### Electronic Data Interchange (EDI)

A standard format for exchanging business data. EDI is based on the use of message standards, ensuring that all participants use a common language. A message standard consists of uniform formats for business documents which have been adopted for electronic transmission purposes. EDI may be transmitted on the Internet or on a closed computer network. (A1 9, A1 10).

### Electronic Funds Transfer (EFT)

Any transfer of funds initiated through an electronic terminal, telephone, computer or magnetic tape. The term includes, but is not limited to, Automated Clearing House (ACH) transfers and transfers made at automated teller machines and point-of-sale terminals. The term also applies to credit card payments and purchases made with smart cards.(A1 8).

### E-mail (electronic mail)

Used to communicate with contacts within or outside of your organization. This includes electronic mail by Internet or other computer networks. Both X.400 and X.500 mail transfer methods are included in E-mail, as is the more common SMTP method of transferring messages. Only unformatted text files are included in E-mail. ( A1 3, A2, B2 2).

### T1 and T3 lines

The bandwidth of a T1 line is between 64Kbps (kilobits per second) and 1.544 Mbps (Megabits per second) including both fractional and full T1 lines. Fractional T1 or T3 lines represent a portion of the full line's bandwidth, used when a share of a T1 or T3 line is leased. The bandwidth of a T3 line including a fractional T3 line is between 1.544 Mbps and 44.736 Mbps. The transmission for the T1 and T3 systems is digital using pulse code modulation and time-division multiplexing. The hardware for T1 and T3 lines may be a pair of two twisted-pair copper wires, coaxial cable, optical fiber, digital microwave or other media.( B1 2, B1 3, B1 4).

### Total operating revenue for the fiscal year ending in 1999

Include sales of goods and services and the total proceeds from the disposition of stock-in-trade or inventory during the period. (Sales of services represents the actual or expected cash inflow for services rendered during the period (net of returns and allowances, sales and excise taxes) and rental revenue resulting from the renting of real estate, machinery, equipment and other properties). Commission revenue includes the remuneration to an agent or middleman for providing the service to the vendor or purchaser of bringing together the two parties to a transaction. Also included are receipts and inflows of cash, receivables or other considerations that are not elsewhere classified, not related to income of prior periods, or not of a capital nature. Total operating revenue includes all foreign revenue recorded by the business unit. Exclude federal or provincial sales taxes collected for remittance to a government agency.( E1).

### Total customer orders via the Internet with or without online payment

This includes the value of your organization's goods or services that were sold over the Internet by your organization. This includes all orders that were placed over the Internet and paid for using the following: the Internet, telephone, facsimile or another technology. Include only goods and services that were sold directly by your organization and exclude sales that were done over the Internet on your behalf by another organization. Include orders placed: by E-mail, on your website, by EDI over the Internet, using Extranets on the Internet and other methods of receiving orders via the Internet.( D2 1).

### Comments