North Dakota Business Use of Information Technology

Prepared for:

Legislative Council and the
Information Technology Department

June 27, 2002

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Knowledge to Bring People
and Resources Together

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June 27, 2002

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Dear Mr. Wolfe:

We are pleased to present to you the attached report entitled North Dakota Business Use of Information Technology. This research study was conceived as a way to assess a variety of information technology issues related to business access necessary to use e-government services. It provides information on North Dakota businesses' current use, demand, awareness, access to network services and trends in the use of information technology.

In general, companies believe that the Internet can make government more convenient and allow better access to information, and there is evidence that certain e-government services would be welcome on the Internet. Plans to provide Internet government services to companies has the potential to achieve cost savings and efficiency, and to provide new ways that government can be accessible to North Dakota businesses. This study presents a picture of what companies believe and how they interact with computers and Internet technologies, and it should serve to contribute ideas to policy makers in respect to the role of government in information technology services.

We have enjoyed conducting this research for you and look forward to working with you in the future. If you have any questions or comments, please feel free to give us a call.

Sincerely,

Cordell Fontaine

Cordell A. Fontaine, Director

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Executive Summary

North Dakota Business Use of Information Technology

This research study was conceived as a way to assess a variety of information technology issues related to business access necessary to use e-government services. The legislative information technology committee was assigned to study the technological capacity and needs of the state because of the passage of house concurrent resolution 3057 during the 2001 legislative session. This survey is a component of that study and outlines the needs of businesses in the state with respect to Internet access and e-government services.

This study examines: the percentage of businesses who do and do not use computer applications and the Internet, the types and speeds of Internet connectivity, attitudes toward and behaviors in using computers and the Internet for various services, and how businesses might use e-government services, the perceived barriers to Internet use, such as cost or availability, how much they might be willing to pay for these services, and what related issues concern them.

Methodology

The results of this study are based on telephone interviews of 875 North Dakota businesses stratified by employee size conducted April 23 to May 17, 2002. The target business survey populations were defined as all private sector businesses with 100 or more employees and a random sample of businesses with 99 employees or less.

Key Findings

- 87% of the companies currently use computer applications,
- 80% are connected to the Internet and 46% use wireless technologies.
- Of these companies, 59% use computer applications to manage its operations regularly and use the Internet moderately or extensively.

What types of Internet connectivity options are available and used by companies?

- 72% report using dial-up modems to connect to the Internet. Of these companies, 80% indicated that high-speed access was available to them.
- 21% use cable modems or wireless or satellite Internet connections.
- The retail/wholesale trade and services industries were most likely to use telephone line connections, while the largest percentage of cable line usage is in the finance and public administration industries.
- 68% report having a choice of Internet service providers.
- The majority of companies (67%) are satisfied with their Internet connection speed.
- 58% report having an Internet website, with another 6% planning to develop a site in the next year.

What are companies' attitudes toward the Internet?

- 52% of the companies agree that the Internet will make the company more competitive.
- 50% would rather improve current mode of business than utilize the Internet.
- 54% disagree that doing business on the Internet gives competitors too much information.
- 55% agree that the Internet will expand companies' customer base.
- 56% agree their company has the technical knowledge to do business over the Internet.
- 70% believe it is important to offer services and products on the Internet.

Why do businesses use or choose not to use the Internet?

- Gathering information and research, research and development and sharing data are the primary reasons companies use the Internet.
- 90% use electronic mail.
- The main reasons companies give for not using the Internet include not having an interest, lack of customer demand and that the cost is prohibitive.
- 17% of the companies surveyed do not use the Internet.
- Internet non-users are predominantly in the wholesale/retail trade and service industries, have fewer than twenty employees and are located in smaller communities.

What e-government services would companies consider using?

- The most likely Internet government services companies would consider using includes accessing road conditions and emergency information, researching legal issues, regulations or laws, accessing online government service directories, posting employment listings, filing wage reports or unemployment insurance forms, accessing training resources, contacting state legislators or government officials, tracking legislation and accessing economic or trade information.

What do companies think about the idea of putting e-government services on the Internet?

- Most companies agree having government services on the Internet would be convenient and allow better access to information. Yet contradictory to these opinions, some companies also agree that they would prefer to see someone in person when using a government service, and that they are concerned about the quality of services they would receive on the Internet.

What are the privacy and security concerns of businesses with respect to e-government applications?

- 42% of all companies are concerned about privacy on the Internet.
- Larger companies more extensively using computer and Internet applications are less likely to have concerns about security and conducting financial transactions over the Internet.
- 42% are comfortable providing credit card information online.
- 81% indicate that maintaining privacy of personal information is a concern.

What are businesses' opinions with respect to financially supporting e-government services?

- Opinions in regards to financially supporting e-government services were most favorable toward two plans: selling advertising on the computer screen to underwrite the costs of the service or using general tax revenue.

Companies believe that the Internet can make government more convenient and allow better access to information, and there is evidence that certain e-government services would be welcome on the Internet. However, this study identifies some difficulties with respect to access to computers and the Internet that need to be addressed. For example, this study indicates that although computer and Internet use among North Dakota companies is at high overall levels, firm employee size and community location factors differentiate how or whether a company uses these Internet technologies.

In this study, there were significant differences in the business use of information technologies by industry, employee firm size and the companies location. Smaller companies located in communities of less than 3,000 show lower use of the Internet, while in regards to industry, the finance/public administration, services and manufacturing, construction transportation, agriculture and mining industries generally show more extensive use of information technologies, compared to the retail and wholesale trade industries. Although e-government will not entirely replace other methods the state currently uses to deliver services, moving services to the Internet does present the chance of disadvantaging these companies.

Dial-up modems are the predominant Internet connection vehicle, and the majority of companies are satisfied with their connection speeds and Internet providers. Even so, companies' perceptions regarding government services on the Internet are cautious with respect to trusting the government's handling of personal and financial information and with respect to preferring to interact with a person when using a government service. In general, this study suggests companies are supportive of the state providing online government services and believe these services would be beneficial. Overall, Internet interest and usage should be positive factors to compliment e-government services since this study suggests companies believe online services should be a state government priority, although the distrust factor with personal financial information will be a barrier and will have to be addressed.

The issues for some companies are Internet usefulness, efficiency, cost and marketing effectiveness. For example, many small companies are not Internet users. Factors that should not be overlooked are the cost of computers and, beyond access and ownership, are the issues of how companies perceive computers or the Internet. The question that comes to mind, since the majority of businesses in North Dakota have less than four employees, is how these companies would respond to government services that were delivered on the Internet. Simple lack of understanding the usefulness of the Internet or perceived difficulty with it discourages the prospects for adopting e-government.

In this study we identified some contradictory beliefs: while information technology users and nonusers alike agree the Internet would allow companies better access and more convenience to government information and services, concerns exist around potential service quality and the presence of a person with whom one could interact. In addition, most companies agree that it is important to offer services and products on the Internet yet many are concerned about financial transactions, security and privacy of personal information.

The state will have to be aware of these perceptions and develop a marketing plan to convince companies that e-government is a worthwhile investment and capable of improving government. Findings around privacy and security are well defined. Companies are concerned about privacy and are worried about sharing credit card numbers or financial information on the Internet with government agencies. Smaller companies especially seem to have the least confidence in government handling their personal, confidential information. These privacy and security concerns will have to be addressed to the point that e-government would rely on personally identifiable information.

These results highlight some possible directions for state efforts:

- Develop market strategies that call attention to privacy and security standards that address companies' concerns.

- Develop market strategies to target industries using the Internet the least. This might involve various settings, technologies, and/or interfaces that can address concerns about the usefulness of the Internet and e-government services.

- Continue to measure Internet use in order to assess who does and does not use the Internet, and why.

In summary, plans to provide Internet government services to companies has the potential to achieve cost savings and efficiency, and to provide new ways that government can be accessible to North Dakota businesses. This study presents a picture of what companies believe and how they interact with computers and Internet technologies, and it should serve to contribute ideas to policy makers in respect to the role of government in information technology services.

North Dakota Business Use of Information Technology

Overview

This research study was conceived as a way to assess a variety of information technology issues related to business access necessary to use e-government services as well as opinions about the proper form and emphasis of those technology services in North Dakota. The legislative information technology committee was assigned to study the technological capacity and needs of the state because of the passage of house concurrent resolution 3057 during the 2001 legislative session. This survey is a component of that study and outlines the needs of businesses in the state with respect to Internet access and e-government services.

This study was designed to document North Dakota businesses' current use, demand, awareness, access to network services and trends in the use of information technology. The North Dakota Information Technology Department has been investigating how to deploy what many perceive to be the next generation of government services. This will be dependent on a web-based or computer network-based delivery system. Consequently, how businesses use computers and the Internet, their attitudes toward both, and how they feel about various privacy and security issues associated with sharing business information on the Internet, and perceived barriers to usage availability are important considerations.

This study had several basic questions:

- What percentage of North Dakota businesses use computers and the Internet? How do businesses use these tools? Are there differences in use associated with business size, by industry or location?
- What types of Internet connectivity options are available and used?
- What are the attitudes toward the Internet and the costs of its use?
- For what purposes do businesses use the Internet? Why do they choose not to use the Internet?
- Would businesses consider using government services if they were available on the Internet?
- What are the privacy and security concerns of businesses with respect to e-government applications?
- What are businesses' opinions with respect to financially supporting e-government services?

Methodology

The results of this study are based on telephone interviews of 875 North Dakota businesses[1] conducted April 23 to May 17, 2002. The sample design involved stratifying businesses by firm employee sizes. Genesys Sampling Systems and *Info*USA supplied the list of North Dakota business. The target business survey populations were defined as all private sector businesses[2] with 100 or more employees and a random sample of businesses with 99 employees or less. Table 1 presents the sample design, the number of businesses by employee firm size and the number of completed interviews by the target business survey populations.

Table 1. North Dakota Businesses by Employee Size and Interviews Completed

Sample Design	Employee Size	Number	Percent	Interviews	Percent
Random Sampling	1 - 4	12,199	58.2%	323	46.0%
	5 - 9	3,990	19.0%	139	19.8%
	10 - 19	2,654	12.7%	96	13.7%
	20 - 49	1,607	7.7%	98	14.0%
	50 - 99	512	2.4%	46	6.6%
		20,962	100.0%	702	100.0%
Census	100 - 249	276	77.5%	117	67.6%
	250 - 499	56	15.7%	35	20.2%
	500 - 999	16	4.5%	11	6.4%
	Over 1,000	8	2.2%	10	5.8%
		356	100.0%	173	100.0%

SSRI interviewed businesses by asking to speak to the individual with the most knowledge about computers and the Internet. The questionnaire was constructed largely of closed ended items (See Appendix A). The telephone interview took approximately 18 minutes to administer. Appendix B provides the response rates as well as demographic composition details of the sample.

Our analyses includes basic percentage reports on the survey responses as well as tables regarding how the factors of business size, industry or location affect the responses.[3] Because the goal of this study is to describe North Dakota businesses' computer and Internet uses, our primary goal is descriptive.

[1] This means that one can be 95 percent confident that the mean response for any question in the random sample of businesses (n=702) will not vary any more than 3.8% in either direction from the actual mean for that response if all businesses in North Dakota were surveyed. Overall, a sample of 875 yields an overall error margin of +/- 3.4%.

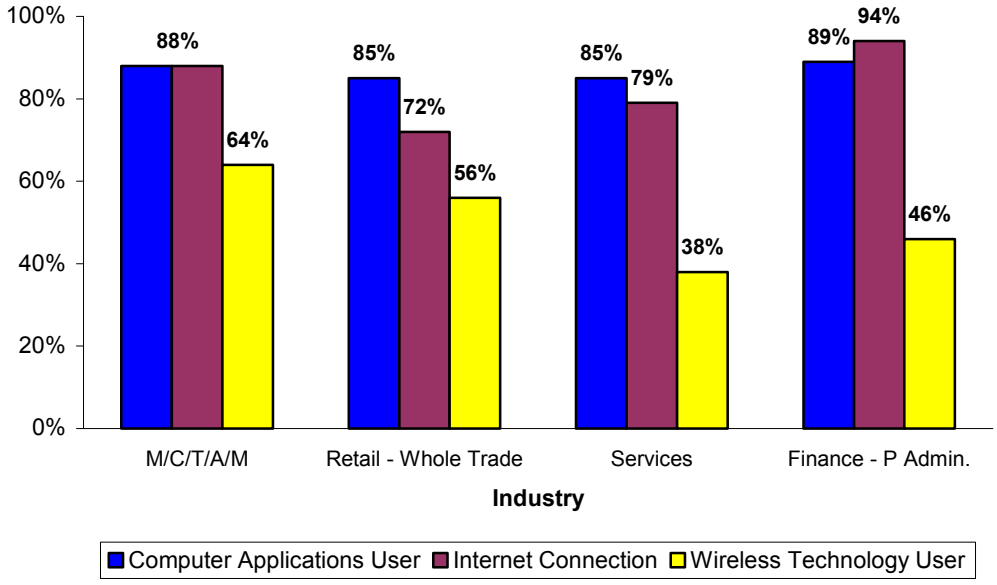
[2] See Appendix B for a list of private sector industries included in the sampling design.

[3] When we note that there are "differences" by various business demographics, firm size, and type of industry, we refer to statistically significant differences. These have been identified through chi square analyses.

Business Use of Computers and Internet Technologies

Information technologies are widely used by North Dakota businesses. Nearly nine in ten businesses now use computer technologies; eighty percent are connected to the Internet and forty-six percent report using wireless technologies. Figure 1 presents business information technology use by industry (M/C/T/A/M represents Manufacturing, Construction Transportation, Agriculture and Mining). [4]

Figure 1. Business InformationTechnology Use by Industry



The retail and wholesale trade industries were less likely to have Internet access compared to other industries. Overall, wireless technology user rates are highest for the manufacturing, construction, transportation, agriculture and mining industries.

As shown in Figure 2, substantial differences in overall information technology use remain between companies of different employee sizes. Companies with less than twenty employees are more likely not to use computer technologies, be connected to the Internet or report using wireless technologies compared to larger companies.

[4] Companies were clustered into industry groups by SIC code; (1) Manufacturing, Construction, Transportation, Agriculture and Mining (2) Retail and Wholesale Trade, (3) Services, and (4) Finance and Public Administration (See Appendix B for a detailed description of industries included in each industry group).

Figure 2. Business Information Technology Use by Employee Size

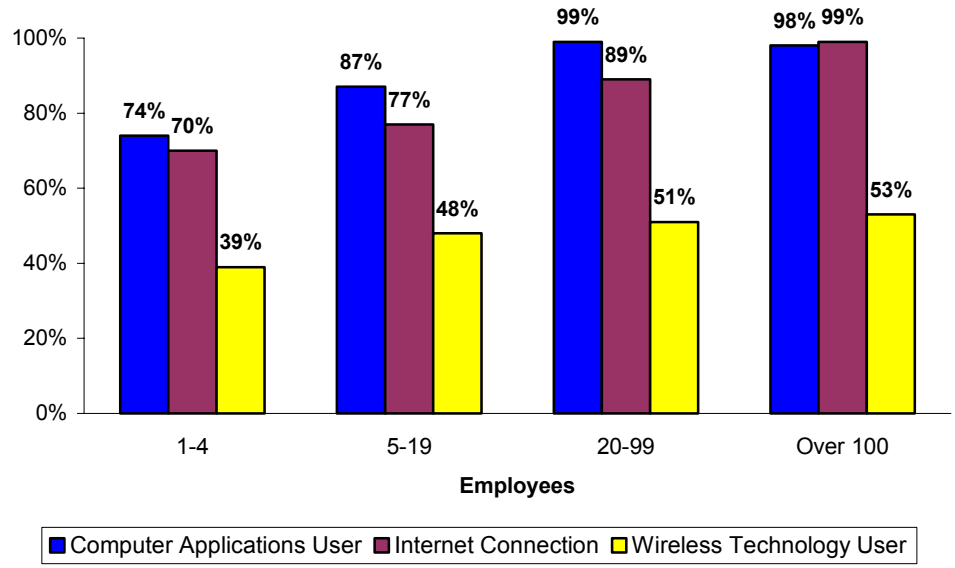
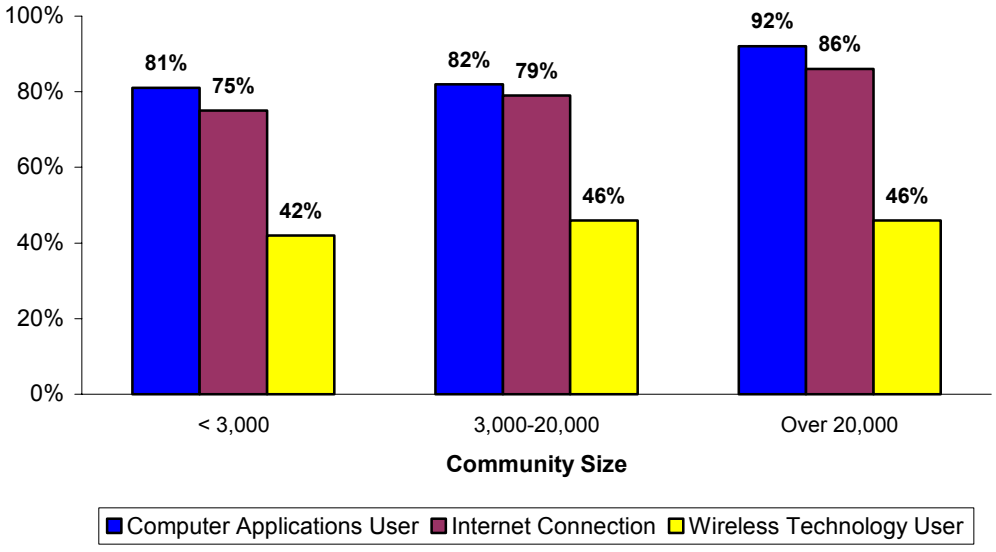


Figure 3 demonstrates there are significant differences in computer use and Internet applications among businesses by community size. Companies located in smaller communities have lower rates of using computer and Internet applications.

Figure 3. Business Information Technology Use by Community Size



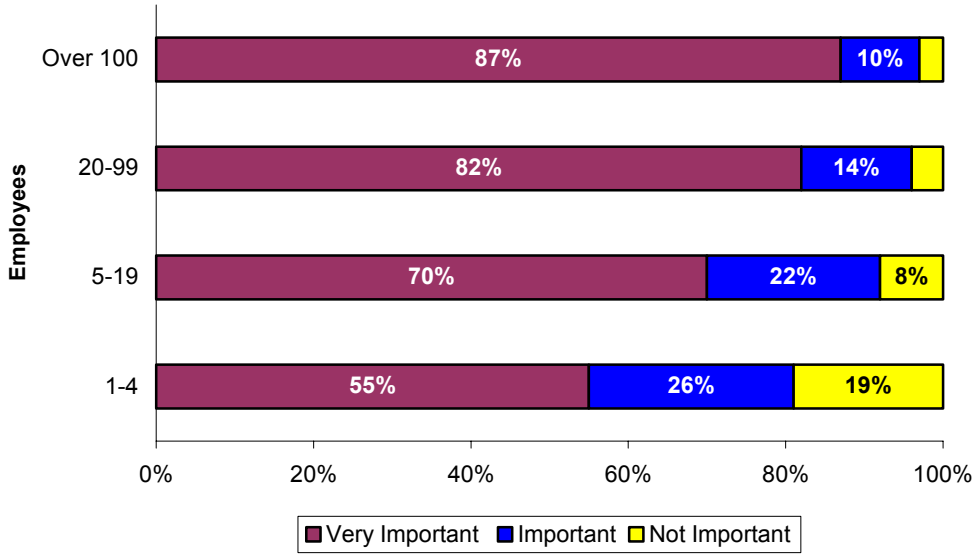
Most companies (90%) agree that the computer and other Internet business practices will be important to their future. As shown in Table 2, differences exist among companies regarding their importance ratings. Companies located in smaller communities are slightly less likely to agree in respect to the future importance of the computer and the Internet.

Table 2. Importance of Future Internet and Computer Applications by Community Size

	Population		
	< 3,000	**3,000 - 20,000**	**Over 20,000**
Very Important	58%	68%	77%
Important	25%	21%	16%
Not Important	17%	11%	7%

As Figure 4 illustrates, larger companies are more likely to *strongly agree* about the importance of the computer and other Internet businesses applications to their future.

Figure 4. Importance of Future Internet Computer Applications by Employee Size



Differences in the importance of information technology applications also remain between companies of different employee sizes. Over one-fourth of companies (27%) with less than nineteen employees report that computer and other Internet business practices are *not important* to their future.

Information Technology Use

Throughout this report, we differentiate among different types of companies by how they use computers and the Internet. The largest group (86%) of the sample consists of those who use computer applications to manage its operations regularly. Most of those companies, eighty-one percent of the sample, also use the Internet. In addition, we asked to what extent they used the Internet; *extensively*, *moderately* or just on a *limited basis*. Companies were then divided into groups based upon their use of computer applications and how extensively they utilized the Internet. The largest group (59%) includes companies who use computer applications to manage its operations regularly and use the Internet moderately or extensively, called "IT users." The next group (19%) includes those companies who do not use computers or the Internet, called "non-users." There also is a group of companies (17%) who use computer applications but report only using the Internet on a limited basis called "light IT use." The final group includes companies who do not use computer applications but may occasionally use the Internet (5%, called "Internet only use").

Figure 5 demonstrates that there are differences in overall information technology use by industry groups. For example, 72% and 64% respectively, of the Finance/Public Administration and Manufacturing, etc., industries extensively use information technologies, while less than half (48%) of the retail and wholesale trade industries report the same usage. The largest percentages of nonusers are represented in the retail and wholesale trade (28%) and the service industries (21%).

Figure 5. Industry by Type of IT Use

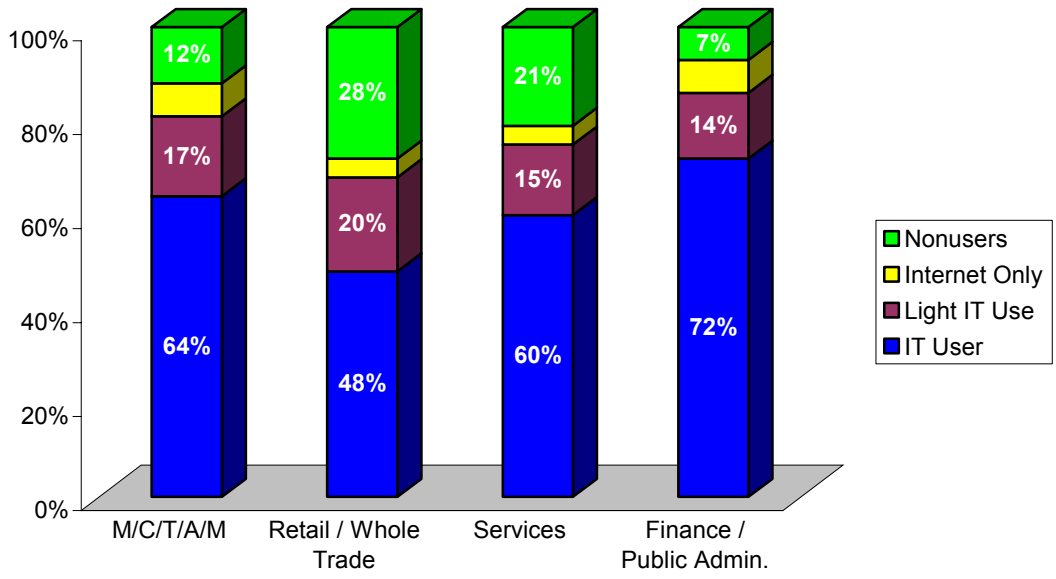


Figure 6 shows that there are differences in information technology use in regards to the number of company employees. Companies with more than 20 employees are more likely to use computer applications to manage its operations and utilize the Internet.

Figure 6. Employee Size by Type of IT Use

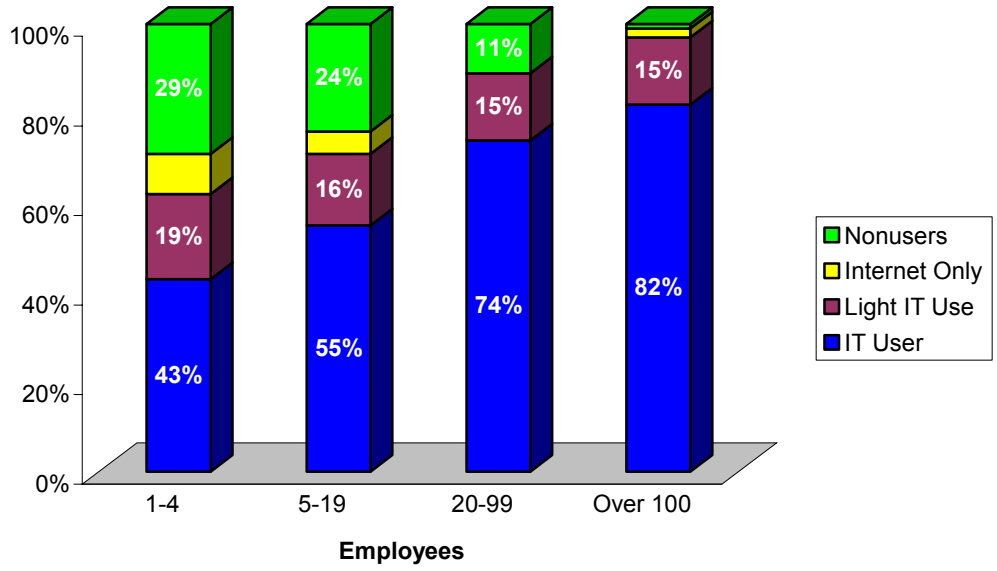
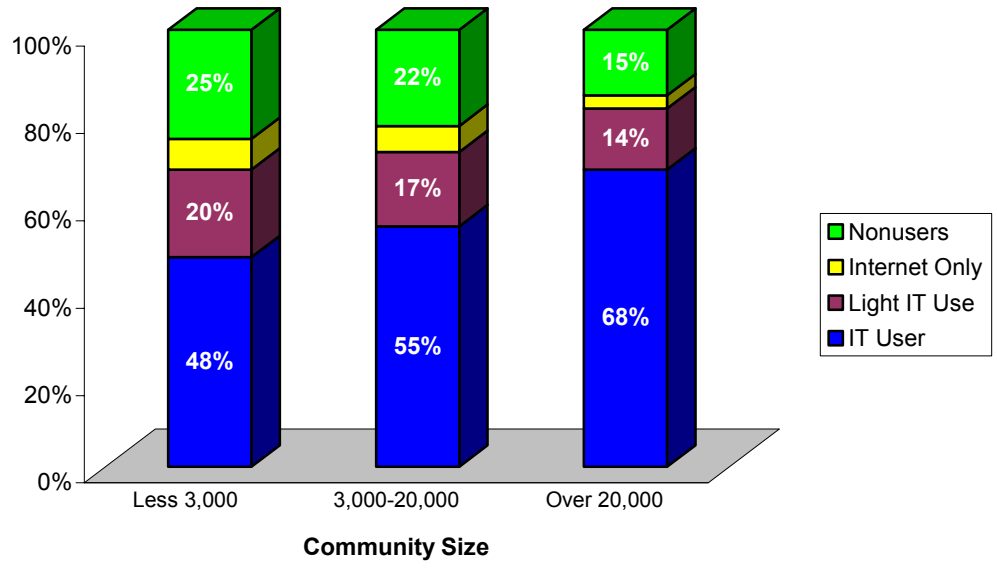


Figure 7 demonstrates that there are differences in information technology use by community size. The differences are greatest for communities of less than 3,000 compared to those of 3,000 to 20,000 and those with 20,000 or greater population.

Figure 7. Community Size by Type of IT Use



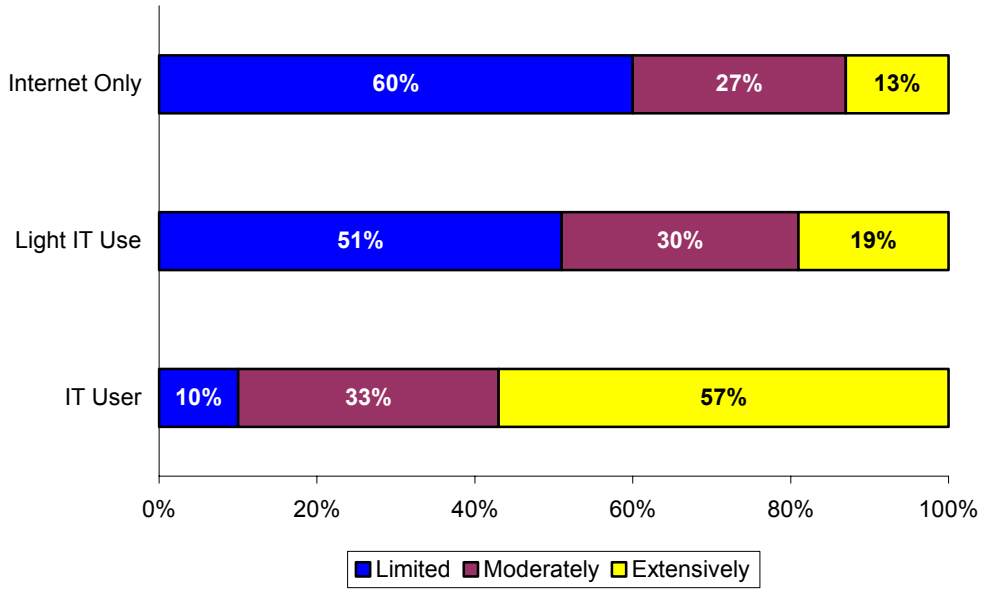
Primary Uses of the Internet. The chief uses of the Internet by business include; gathering information and research (30%) and research/development and sharing information. Table 3 displays the primary reasons companies use the Internet by the type of information technology user.

Table 3. Primary Reason Companies Use the Internet

	Company IT Type		
	IT User	**Light IT Use**	**Internet Only**
Gathering Information and Research	29%	31%	25%
Research/Development, Sharing Information	22%	20%	12%
Gain Access to Link Vendors and Suppliers	8%	7%	12%
Receive Orders from Customers	7%	6%	3%
Acquiring Information from Suppliers	6%	6%	15%
Send Orders to Suppliers	5%	6%	8%
Online Banking and Other Financial Services	5%	4%	0%
Gaining Competitive Advantage	5%	4%	3%
E-mail Communication	5%	9%	8%
Exploring a New Mode of Business	3%	2%	3%
For Inventory Control and Management	2%	4%	8%
Website Hosting	1%	0%	3%
Pressure from Competitors	1%	1%	0%
Advertise Job Vacancies or Recruiting	1%	0%	0%

Electronic Mail. Overall, nine out of ten of the companies surveyed currently use electronic mail. Predictably, companies more involved with computer applications and the Internet use electronic mail more extensively compared to those who use computers on a limited basis.

Figure 8. E-mail Usage by IT Use



Internet Connectivity

The common types of Internet service connections used by companies are shown in Table 4. Most companies who use the Internet make that connection via a regular "dial up" telephone line (72%), with cable modems[5] being the second most common way to connect (12%), followed by wireless or satellite (9%).

Table 4. Internet Service Connections

Internet Connection	Number	Percent
Telephone Line	506	71.5
Cable Modems	88	12.4
Wireless or Satellite	64	9.0
Leased Service	17	2.4
Do Not Know	17	2.4
State Network	10	1.4
Digital Subscriber Line	6	.8

The types of Internet service connections used by companies by Industry are shown in Table 5. Across industries, the retail/wholesale trade (76%) and services industries (73%) were most likely to use telephone line connections, while the largest percentage of cable line usage is in the finance and public administration industries (17%).

Table 5. Internet Service Connections by Industry

% within Industry

		Industry				
		C-M-T-AG-M	Trade	Services	Fin/P Admin	Total
Service used for Internet connection	Telephone line	69.3%	75.5%	73.2%	64.3%	71.5%
	Cable line	11.4%	9.4%	13.2%	17.4%	12.4%
	Leased Service	1.8%	2.1%	3.0%	2.6%	2.4%
	Wireless or sat	13.3%	11.5%	3.8%	9.6%	9.0%
	DK	2.4%	1.0%	2.1%	5.2%	2.4%
	State Network	.6%		3.8%		1.4%
	DSL	1.2%	.5%	.9%	.9%	.8%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

Predictably, there are differences among companies by type of Internet connections and firm size and location. As shown in Table 6 and 7, companies with more employees and located in larger communities are less likely to use a regular telephone line and to a greater extent utilize cable lines, wireless or satellite services.

[5] According to the FCC, DSL, or digital subscriber line, and cable modems, are the two most widely available broadband Internet access technologies in the U.S. (broadband is defined as any connection faster than 200 kbps).

Table 6. Internet Service Connection by Employee Size

% within Firm Empl Size

		Firm Empl Size				
		1-4	5-19	20-99	100+	Total
Service used for Internet connection	Telephone line	84.7%	73.3%	60.9%	59.6%	71.5%
	Cable line	7.0%	12.8%	15.6%	17.0%	12.4%
	Leased Service	.9%	2.8%	1.6%	4.7%	2.4%
	Wireless or sat	5.2%	7.2%	15.6%	11.1%	9.0%
	DK	.9%	2.8%	1.6%	4.7%	2.4%
	State Network	.9%	.6%	2.3%	2.3%	1.4%
	DSL	.4%	.6%	2.3%	.6%	.8%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

Table 7. Internet Service Connection by Community Size

% within Community Size

		Community Size			
		< 3,000	3,000-20,000	20,000+	Total
Service used for Internet connection	Telephone line	87.7%	66.9%	64.7%	71.5%
	Cable line	7.2%	13.7%	14.7%	12.4%
	Leased Service	1.0%	3.6%	2.7%	2.4%
	Wireless or sat	2.1%	12.9%	11.2%	9.0%
	DK		2.2%	3.7%	2.4%
	State Network	1.0%	.7%	1.9%	1.4%
	DSL	1.0%		1.1%	.8%
Total		100.0%	100.0%	100.0%	100.0%

Access Speed. Companies who connect to the Internet by a regular "dial-up" telephone line (72%) were asked what was their maximum access speed. Most of these individuals (45%) did not know their companies Internet access speed (Figure 9). One-fourth reported having a modem connection at 56K while another thirteen percent had a modem at less than 56K. Generally referred to as "broadband," cable modems and DSL allow for higher speed access than is available through dial-up telephone connection. Digital subscriber lines[6] (DSL) and T-1[7] lines were used by twelve percent and five percent of the companies surveyed, respectively.

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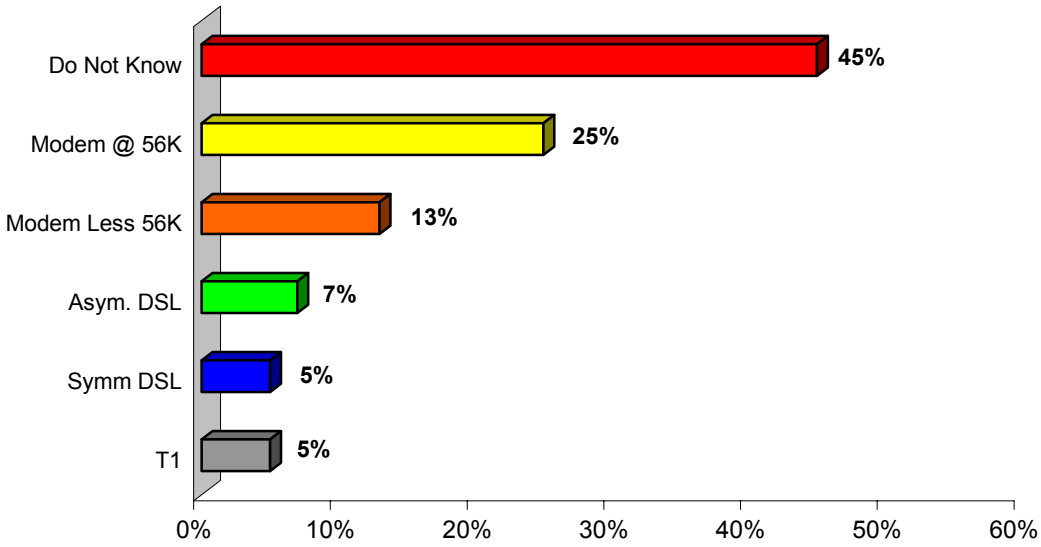
[6] ADSL: (a*symmetrical DSL*) ADSL offers differing upload and download speeds and can be configured to deliver up to six megabits of data per second (6000K) from the network to the customer that is up to 120 times faster than dial-up service.
SDSL: (symmetric DSL) SDSL is a vendor-proprietary version of symmetric DSL that may include bit-rates to and from the customer ranging of 128 kbps to 2.32 Mbps. SDSL is an umbrella term for a number of supplier-specific implementations over a single copper pair providing variable rates of symmetric service.

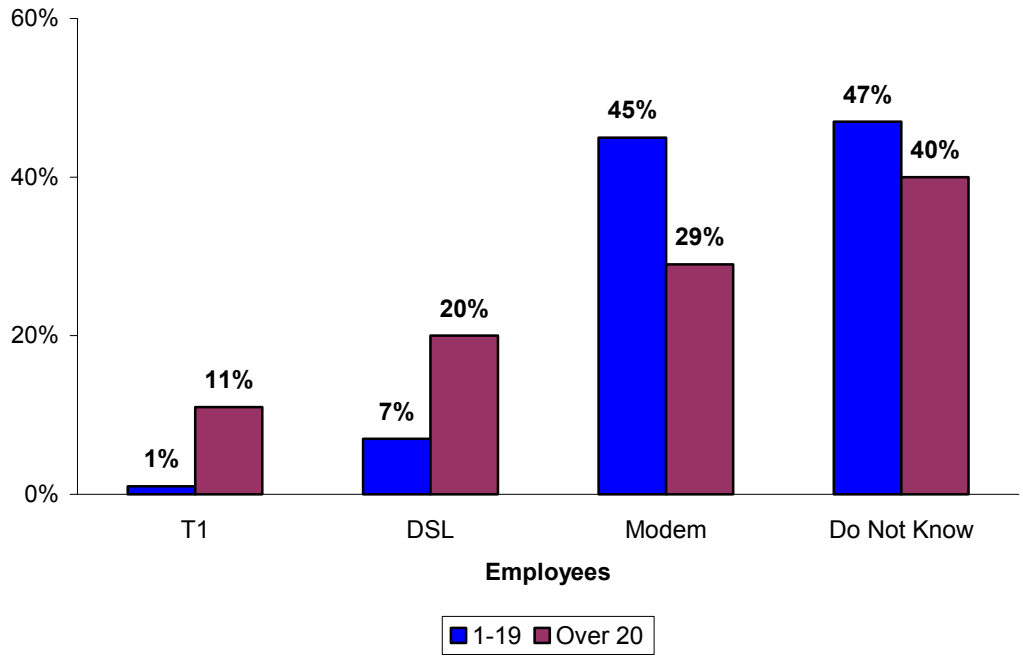
[7] The T1 (or T-1) carrier is the most commonly used digital line in the United States, Canada, and Japan. In these countries, it carries 24 pulse code modulation (**PCM**) signals using time-division multiplexing (**TDM**) at an overall rate of 1.544 million bits per second (**Mbps**). T1 lines use copper wire and span distances within and between major metropolitan areas.

Figure 9. Telephone Line Internet Access Speeds



Because DSL connections are more costly than dial-up services, the proportion of company Internet users subscribing to these broadband services varies in expected ways, with larger companies, for example, having higher subscriber rates than smaller companies (Figure 10).

Figure 10. Internet Connection Service by Employee Size

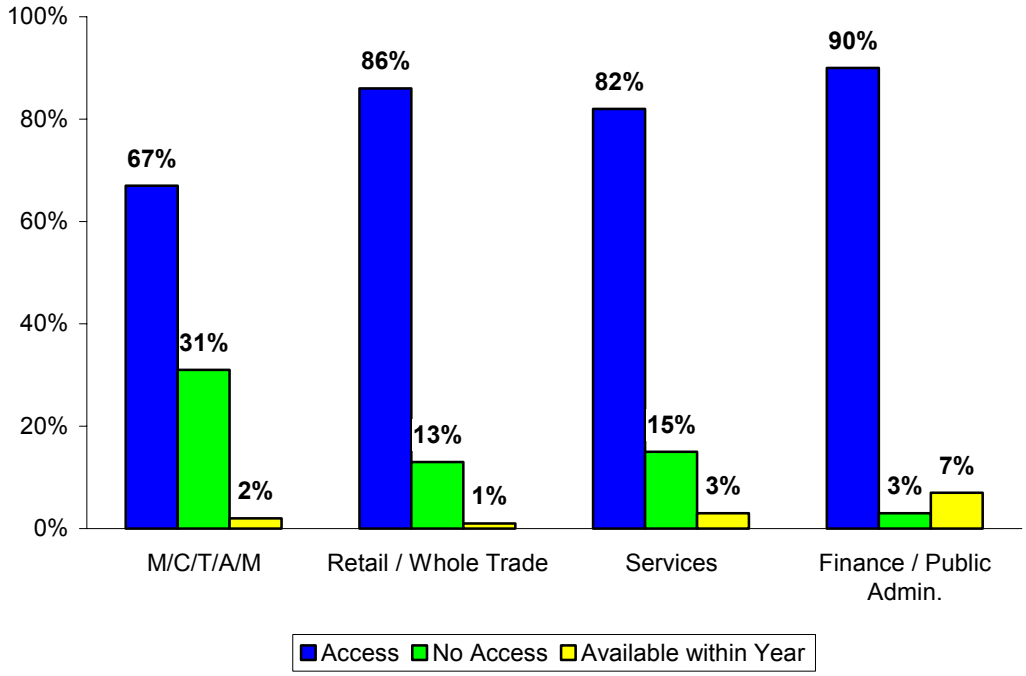


Leased Service Access Speeds[8]. Companies who connect to the Internet by a "leased service" (2%) were asked what was their maximum access speed. Sixty percent of these leased service users report DS1 or T1 (1.544 mbps) and twenty percent indicate dedicated digital circuit (less than 1.544 mbps) access speeds.

Modem Users and High Speed Access. Companies who connect to the Internet by a regular "dial-up" telephone line (72%) were asked if high-speed access was available in their area. A strong majority of the companies (80%) indicated that high-speed access was currently available, sixteen percent report not having high-speed access, and three percent indicate it will be available within the year.

Figure 11 demonstrates that there are differences in access by industry groups. The manufacturing, construction transportation, agriculture and mining industries were more likely to report high-speed access was unavailable compared to retail and wholesale trade, services, and finance and public administration industries. Predictably, there are also differences regarding high-speed access and company location. Companies located in smaller communities (3,000 or less) are least likely to report access is available in their area compared to larger communities.

Figure 11. High Speed Access by Industry



[8] Companies who connect to the Internet by a "wireless or satellite " connection were also asked what was their maximum access speed (n=64). Almost 90% all of these respondents indicated they had "no idea" of the speed of their access.

Internet Connection Satisfaction. Over two-thirds of the companies rate the adequacy of their Internet connection as *adequate* (44%) or *very adequate* (23%). Smaller companies in communities under 3,000 were more likely to rate their connection as *not at all adequate* or *somewhat adequate.* Table 8 presents companies Internet connection satisfaction by the degree of information technology use. Information technology users (71%), light users (64%) and Internet only users (66%) all rate the adequacy of their Internet connection as *adequate* or *very adequate*.

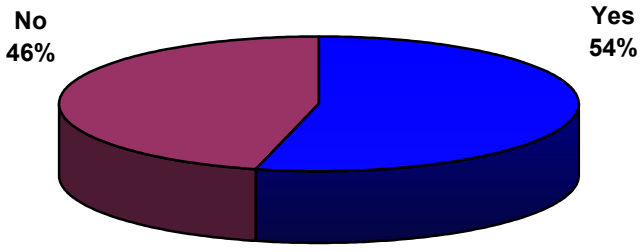
Table 8. Internet Connection Satisfaction by IT Use

% within ITUSE

		ITUSE			
		IT Users	Light IT Users	I Only	Total
Q15 Connection speed rating	Not at all adeq	8.3%	10.5%	7.5%	8.7%
	Somewhat adequate	21.3%	25.9%	27.5%	22.6%
	Adequate	42.5%	49.0%	47.5%	44.1%
	Very adequate	27.9%	14.7%	17.5%	24.6%
Total		100.0%	100.0%	100.0%	100.0%

Companies rating their Internet connection as *not at all adequate* or *somewhat adequate* were asked if they plan to upgrade to a faster connection within the year. Figure 12 shows that over half of the companies (54%) plan to upgrade to a faster connection or a higher bandwidth in the next year.

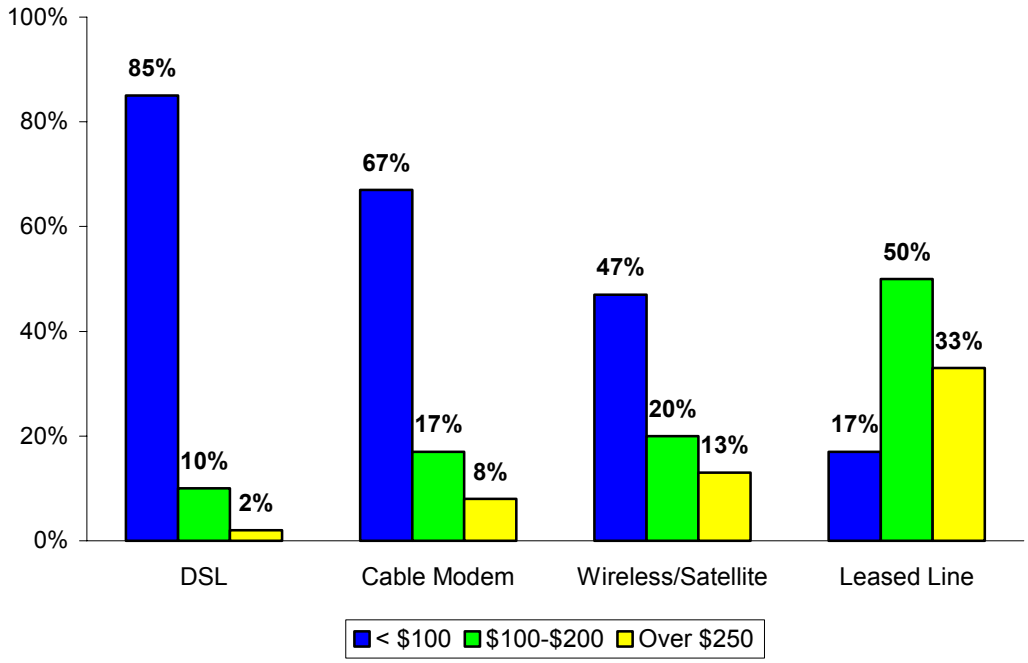
Figure 12. Companies Planning Upgrade to a Faster Connection



Half of these companies (49%) report a DSL connection would best meet their needs, followed by wireless or satellite (14%), and cable modem (11%) Internet service options.

Companies were asked what would be an affordable monthly Internet access rate. Among companies interested in DSL, cable modems, and wireless or satellite connections, the preferred affordable monthly rate was less than $100 (Figure 13). With regard to companies interested in a leased service Internet connection, half report that $100 to $200 would be affordable.

Figure 13. Affordable Monthly Internet Access Rates



Available Services. Over two-thirds of the companies surveyed (68%) report they have a choice of Internet service providers. Predictably, there are differences by community size in the availability of Internet services. As Table 9 displays, over half of the companies (53%) located in communities of less than 3,000 report not having a choice of Internet providers. A substantial number of companies (22%) report they "did not know" how many providers were located in their area.

Communities larger than 20,000 averaged 3.94 Internet service providers, while communities 3,000 to 20,000 averaged 3.18 and those with population of 3,000 or smaller averaged 2.6.

Table 9. Internet Service Provider Choices

% within CSIZE

		CSIZE			
		< 3,000	3,000-20,000	20,000+	Total
Q20 Choice of Internet service providers	Yes	44.3%	73.4%	78.7%	68.2%
	No	53.1%	20.1%	15.6%	26.8%
	DK	2.6%	6.5%	5.7%	5.0%
Total		100.0%	100.0%	100.0%	100.0%

DSL (70%), cable modem (64%) and wireless/satellite (54%) Internet services were all available to over half of the companies surveyed. Predictably, there are differences regarding high-speed availability and company location and employee size. Companies located in smaller communities with fewer than four employees are least likely to have access to high-speed Internet services (Figures 14 and 15).

Figure 14. Available High-Speed Internet Services by Community Size

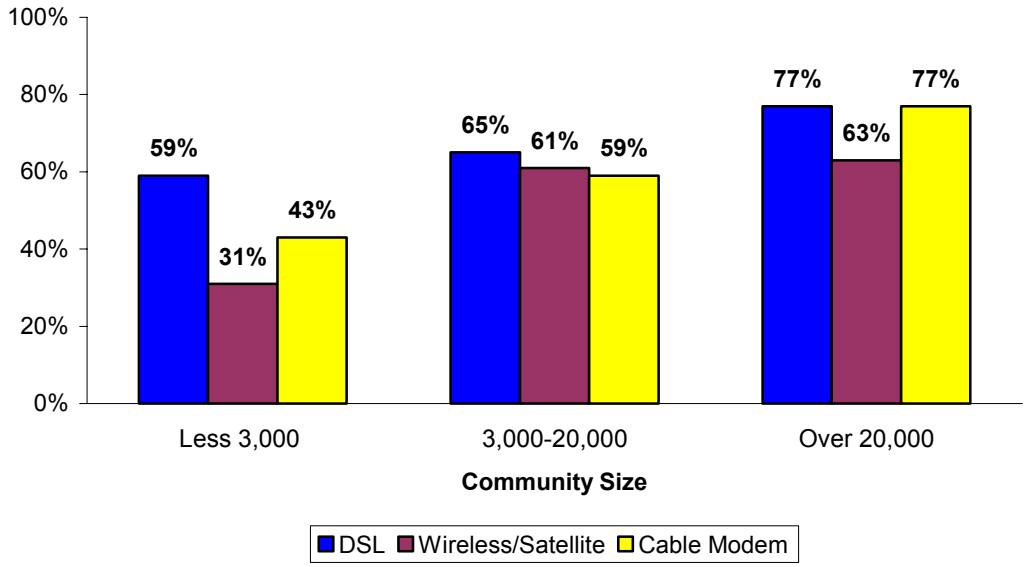
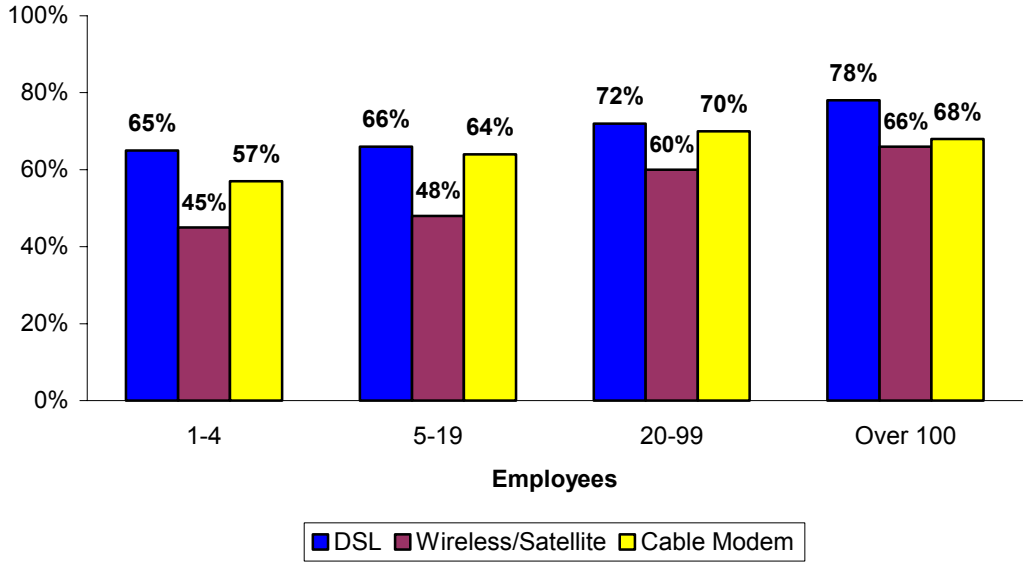


Figure 15. Available High Speed Internet Services by Employee Size



Nearly half of the entire sample (48%) reported using their local telephone company to provide Internet services (Table 10).

Table 10. Internet Service Providers

Internet Connection	Number	Percent
Local Telephone Company	334	47.9
Local Computer Store/Vender	51	7.3
Wireless Company	50	7.2
Do Not Know	48	6.9
Cable Television System	42	6.0
American On-line	40	5.7
Microsoft Network	34	4.9
AT&T, Earthlink, Netcom or Compuserve	33	4.7
Prodigy, Sprint, MCI or Qwest	27	3.9
North Dakota State System	8	1.1
Other	7	1.0
Local Newspaper	6	.9

As shown in Tables 11 and 12, companies with over nineteen employees in larger communities were not as likely to rely on the local telephone company compared to companies in smaller communities with five or fewer employees. Companies with five or more employees in communities with more than 20,000 people are more likely to use a wider array of Internet service providers.

Table 11. Internet Service Providers by Employee Size

% within FSIZE Firm Empl Size

		FSIZE Firm Empl Size				
		1-4	5-19	20-99	100+	Total
Q23 Provider used by company	America on-line	4.4%	8.9%	7.1%	3.0%	5.7%
	Microsoft network	8.0%	4.5%	3.2%	2.4%	4.9%
	AT&T / Earthlink /	3.6%	1.7%	5.6%	8.9%	4.7%
	Prodigy / Sprint /	3.1%	2.2%	4.0%	6.5%	3.9%
	Local telephone co	59.6%	46.9%	40.5%	38.7%	47.9%
	Local newspaper	.9%	1.1%	1.6%		.9%
	Local computer sto	5.8%	6.7%	7.9%	9.5%	7.3%
	Long distance phon	2.2%	3.4%	3.2%	1.8%	2.6%
	Cable TV system	4.4%	6.1%	5.6%	8.3%	6.0%
	A wireless company	2.2%	8.9%	11.1%	8.9%	7.2%
	Other	1.3%	.6%		1.8%	1.0%
	DK	4.0%	8.9%	7.1%	8.3%	6.9%
	State System	.4%		3.2%	1.8%	1.1%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

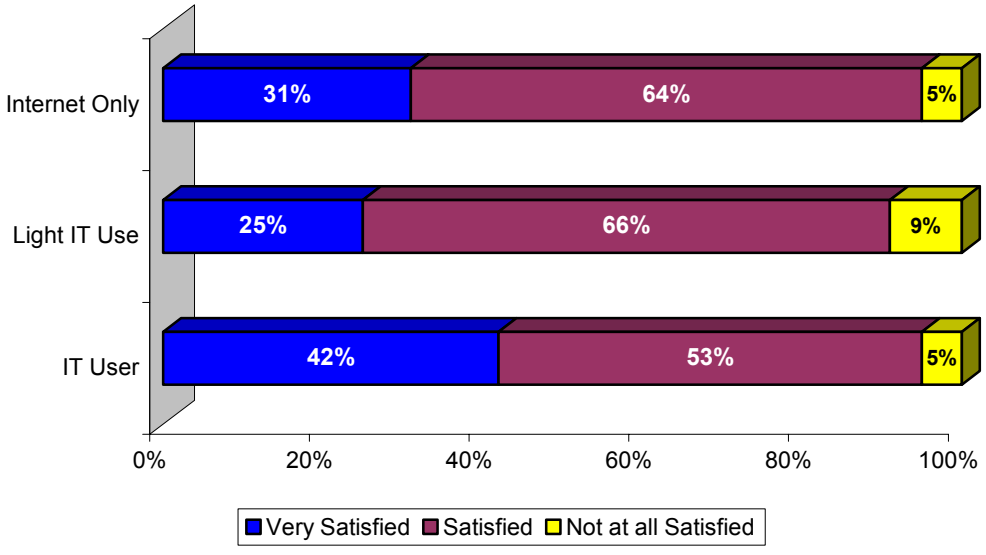
Table 12. Internet Service Providers by Community Size

% within CSIZE

		CSIZE			
		< 3,000	3,000-20,000	20,000+	Total
Q23 Provider used by company	America on-line	3.1%	2.2%	8.4%	5.7%
	Microsoft network	3.6%	2.2%	6.5%	4.9%
	AT&T / Earthlink /	3.6%	2.9%	6.0%	4.7%
	Prodigy / Sprint /	1.0%	2.2%	6.0%	3.9%
	Local telephone co	75.5%	51.4%	32.1%	47.9%
	Local newspaper	.5%		1.4%	.9%
	Local computer sto	1.6%	12.3%	8.4%	7.3%
	Long distance phon	3.1%	2.2%	2.4%	2.6%
	Cable TV system	.5%	7.2%	8.4%	6.0%
	A wireless company	1.6%	8.0%	9.8%	7.2%
	Other	1.6%		1.1%	1.0%
	DK	2.6%	8.7%	8.4%	6.9%
	State System	1.6%	.7%	1.1%	1.1%
Total		100.0%	100.0%	100.0%	100.0%

Almost all of the companies (94%) were satisfied with their Internet provider; only six percent of the sample said they were not satisfied. About fifty-six percent stated they were *satisfied* and another thirty-eight percent stated they were *very satisfied*. As shown in Table 16, satisfaction ratings are equally positive for all of the information technology company types.

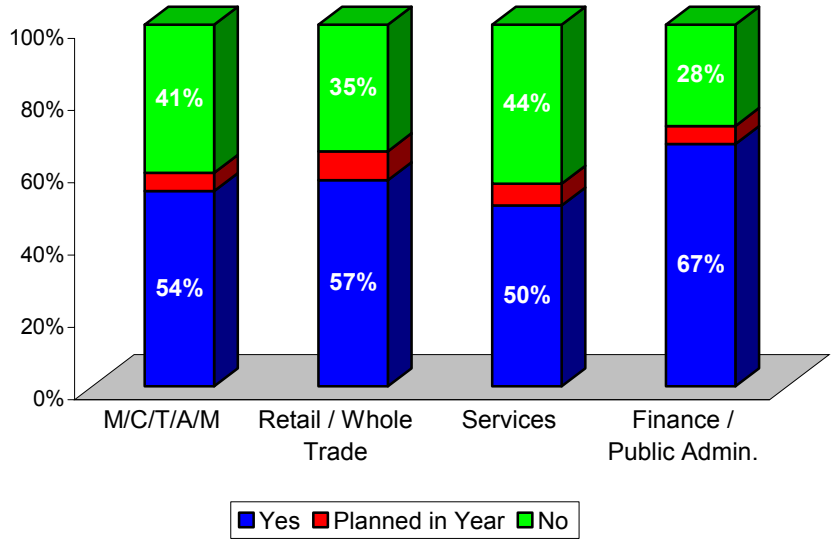
Figure 16. Internet Service Provider Satisfaction by IT Use



When read the question "is redundancy of transmission important to ensure that your company always maintains access to the Internet," over half of the companies (55%) agreed. One-third of the companies (33%) were not concerned about redundancy and one-tenth indicated they did not know, or were not familiar with the term. Companies with over 100 employees and those using information technologies extensively were more likely to be concerned with redundancy. Companies expressing a concern about redundancy were asked how they secure redundancy. Most companies (60%) *did not know* how redundancy was secured, while twelve percent report currently not having any error checking protocol, ten percent utilize *multiple service providers*, and nine percent use *dual feed fiber*.

Internet Websites. Over half of the companies (58%) report having a website on the Internet, with another six percent planning to develop a site in the next year. Figure 17 presents companies with websites, and those planning a site in the next year by industry.

Figure 17. Company Websites by Industry



Differences do not exist by industry regarding company websites. By industry, finance/public administration (67%), retail and wholesale trade (57%), services (50%) and the manufacturing, construction, transportation, agriculture and mining industries (54%) report having an Internet website. Predictably, there are differences among companies regarding websites by firm

Table 13. Company Websites by Employee Size

% within FSIZE Firm Empl Size

		FSIZE Firm Empl Size				
		1-4	5-19	20-99	100+	Total
Q27 Website on Internet now	Yes	37.9%	49.7%	70.1%	82.8%	57.5%
	No	55.5%	44.7%	22.0%	12.4%	36.3%
	Planned in next yr	6.6%	5.6%	7.9%	4.7%	6.1%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

employee size and location. As shown in Table 13, companies with more employees and located in larger communities (Table 14) are more likely to report having a website.

Table 14. Company Websites by Community Size

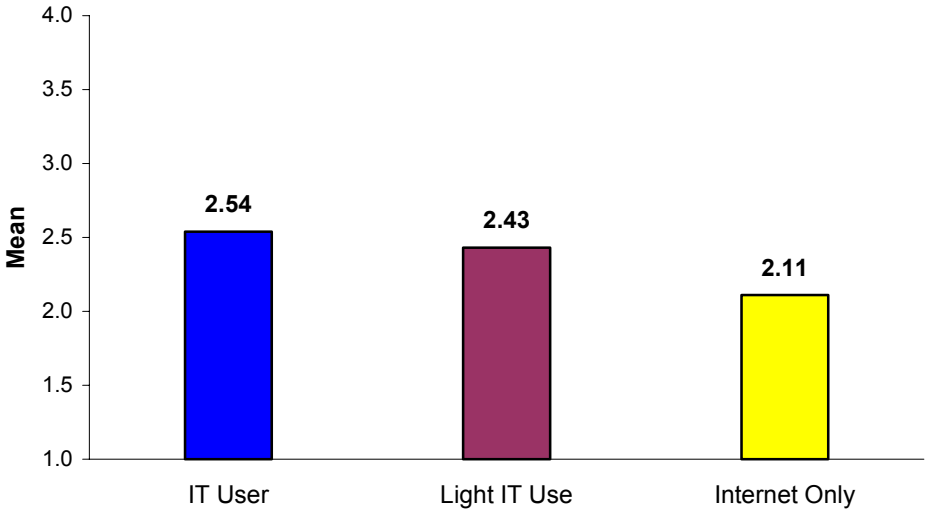
% within CSIZE

		CSIZE			
		< 3,000	3,000-20,000	20,000+	Total
Q27 Website on Internet now	Yes	39.9%	55.8%	67.4%	57.5%
	No	53.4%	37.0%	27.2%	36.3%
	Planned in next yr	6.7%	7.2%	5.4%	6.1%
Total		100.0%	100.0%	100.0%	100.0%

Information Technology Resources

Training Resources. Companies who use computer technologies were asked about availability of technology training resources to improve employee skills. Over half of the companies (54%) rate the availability of technology training resources as *adequate* (41%) or *very adequate* (13%). Nearly one-third of the companies rate training resources as *somewhat adequate* (31%), and over one-tenth (16%) report *not at all adequate*. Figure 18 presents the average adequacy ratings by information technology use, where "1" means *not at all adequate* and "4" means *very adequate*.

Figure 18. Mean Technology Training Resource Adequacy Ratings of IT Users



Information technology users were more likely to rate the availability of employee technology training resources as *adequate* or *very adequate* compared to Internet only companies. Predictably, companies in smaller communities (Table 15) are also more likely to report training resources are inadequate compared to larger communities.

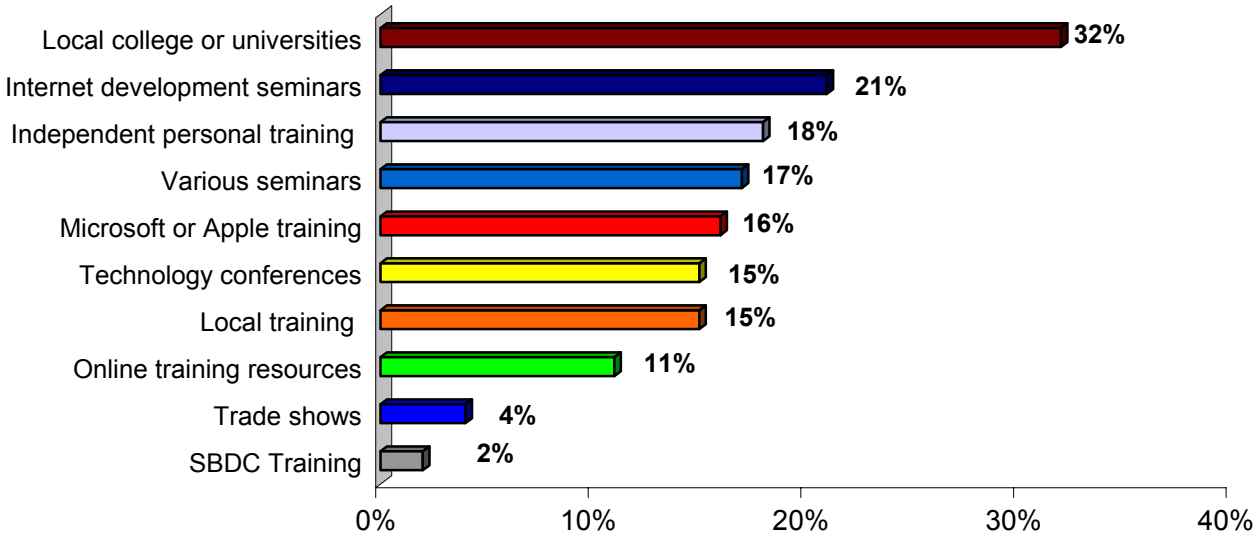
Table 15. Technology Training Resources by Community Size

% within CSIZE

		CSIZE			
		< 3,000	3,000-20,000	20,000+	Total
Q31 Availability of technology training resources	Not at all adequat	21.7%	16.4%	13.2%	16.1%
	Somewhat adequate	33.7%	35.1%	27.7%	30.8%
	Adequate	36.4%	34.3%	44.8%	40.5%
	Very adequate	8.2%	14.2%	14.3%	12.6%
Total		100.0%	100.0%	100.0%	100.0%

Employee Training. About half of the companies (45%) take advantage of training programs to more effectively utilize the Internet. The most commonly used Internet training programs were local college or university classes (32%), Internet development seminars (21%) and independent personal computer training classes (18%). Figure 19 presents the types of Internet training programs used by companies.

Figure 19. Internet Training Programs Used



Vendor Support. Companies were also asked about availability of vendor support resources to assist them in implementing Internet technologies. Over half of the companies (57%) rate the availability of vendor support resources as *adequate* (42%) or *very adequate* (15%). One-third of the companies rate vendor support resources as *somewhat adequate* (34%), and nearly one-tenth (9%) report *not at all adequate*. There were no differences among companies in regards to the type of information technology user, by industry, or the firms employee size, although companies in smaller communities (Table 16) are more likely to report vendor support resources are inadequate compared to larger communities.

Table 16. Vendor Support Resources by Community Size

% within CSIZE

		CSIZE			
		< 3,000	3,000-20,000	20,000+	Total
Q34 Availability of vendor support resources	Not at all adequat	14.4%	6.0%	7.6%	9.1%
	Somewhat adequate	37.2%	41.0%	28.6%	33.5%
	Adequate	35.6%	35.8%	47.8%	42.0%
	Very adequate	12.8%	17.2%	16.0%	15.4%
Total		100.0%	100.0%	100.0%	100.0%

Internet Barriers and Challenges

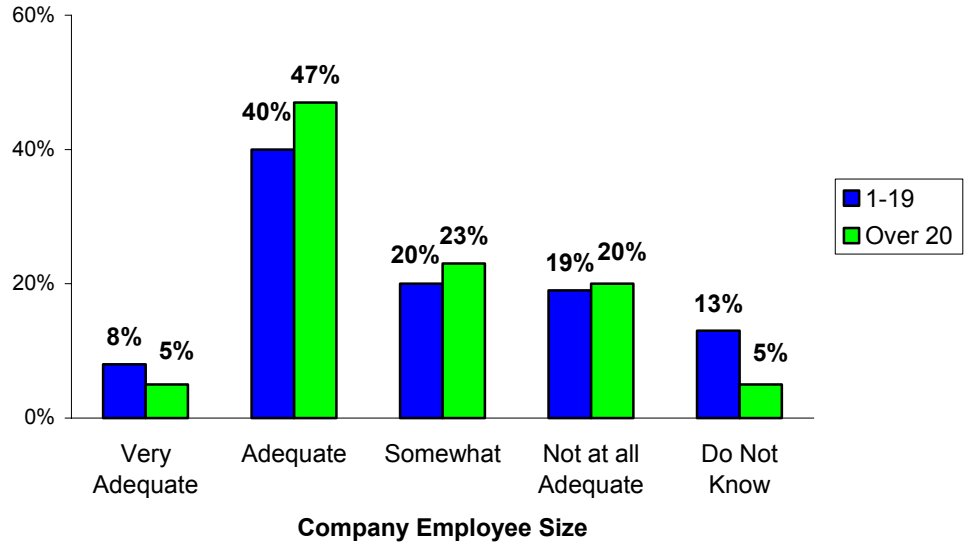
Barriers Using the Internet. Twenty percent of the companies surveyed report experiencing barriers using the Internet. The most common barriers include inadequate access speed (20%), computer system reliability (19%), security concerns (9%), last mile infrastructure (8%), uncertainty/lack of information (8%), lack of skilled personnel (6%) and cost of services (5%).

Internet Challenges. The entire business sample was read a number of challenges and asked if these may create difficulties for their company as they expand or restructure using Internet technology. Challenges most often reported included understanding regional, national, and global Internet markets (35%), business restructuring around the Internet (33%), developing a business strategy for electronic commerce (32%), using the Internet to manage costs and/or expand revenues (30%), financing Internet ventures (30%) and finding the technical expertise needed (30%). Other Internet restructuring challenges included understanding how their industry is using the Internet (29%), understanding the opportunities available (28%), developing a business plan (24%), working with technology service providers (24%) and finding affordable service (22%).

There were no differences among companies reporting challenges in regards to the type of information technology user, by industry, or company location. Companies with twenty or more employees were more likely to report business restructuring around the Internet and using the Internet to manage costs and expand revenues as challenges compared to smaller sized firms (less than nineteen employees).

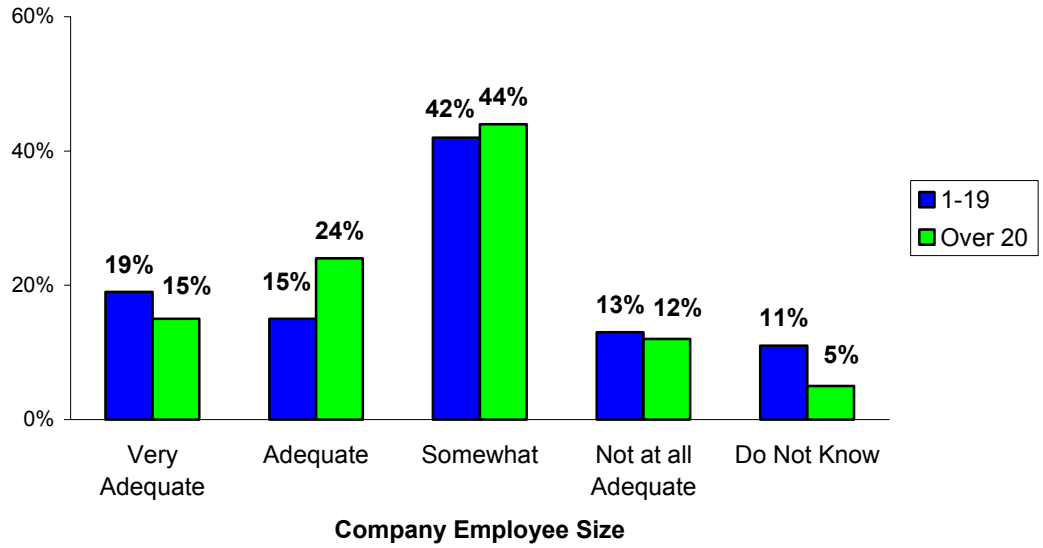
Internet Support Issues. To evaluate the adequacy of Internet technology resources the entire business sample (users and nonusers) were asked a series of questions regarding the availability of Internet technology support. Half of the companies stated the availability of programmers to develop applications is *adequate* or *very adequate*, while one-fifth said *somewhat adequate*. In addition, one-fifth of the companies report the availability of programmers is *not at all adequate* and another tenth did not have enough information to assess the support issue. Differences exist among companies in regards to the type of information technology user, by the firms employee size and location. Predictably, companies more extensively using computer and Internet applications, employing twenty or more employees (Figure 20), and in larger communities are more likely to report the availability of programmers.

Figure 20. Availability of Programmers to Develop Applications by Employee Size



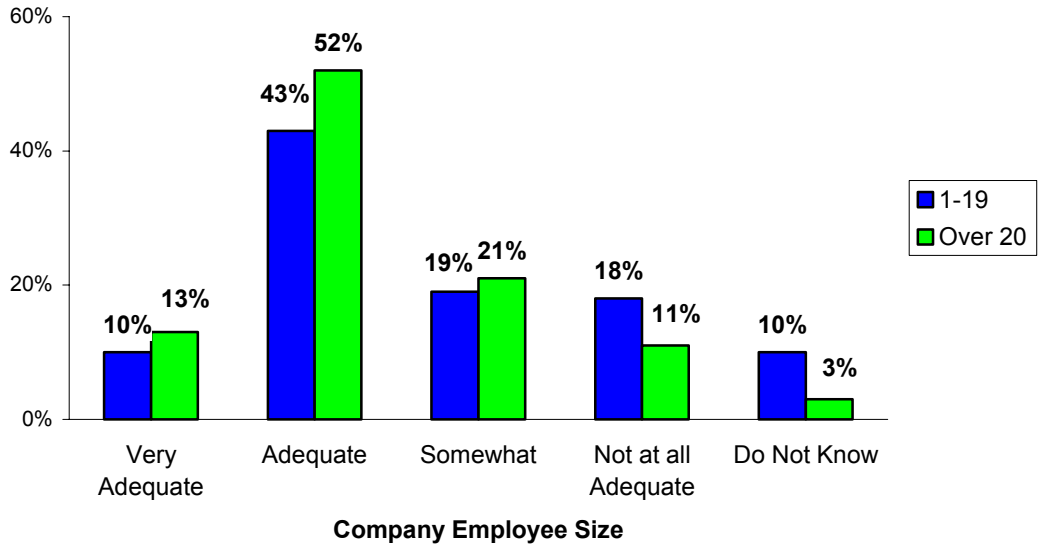
When asked about the availability of web development professionals, over half of the companies (56%) indicate resources are *adequate* or *very adequate*, while eighteen percent said *somewhat adequate* and another seventeen percent stated *not at all adequate.* Predictably, companies more extensively using computer and Internet applications, employing twenty or more employees (Figure 21), and in larger communities are more likely to report the availability of web development professionals.

Figure 21. Availability of Web Development Professionals by Employee Size



Fifty-eight percent of the companies surveyed indicated the availability of network support personnel is *adequate* or *very adequate*, while nearly one-fifth said *somewhat adequate*. In addition, fifteen percent of the companies report the availability of network support personnel is *not at all adequate* and another eight percent *did not know*. Companies more extensively using computer and Internet applications, employing twenty or more employees (Figure 22), and in larger communities are more likely to report the availability of network support personnel.

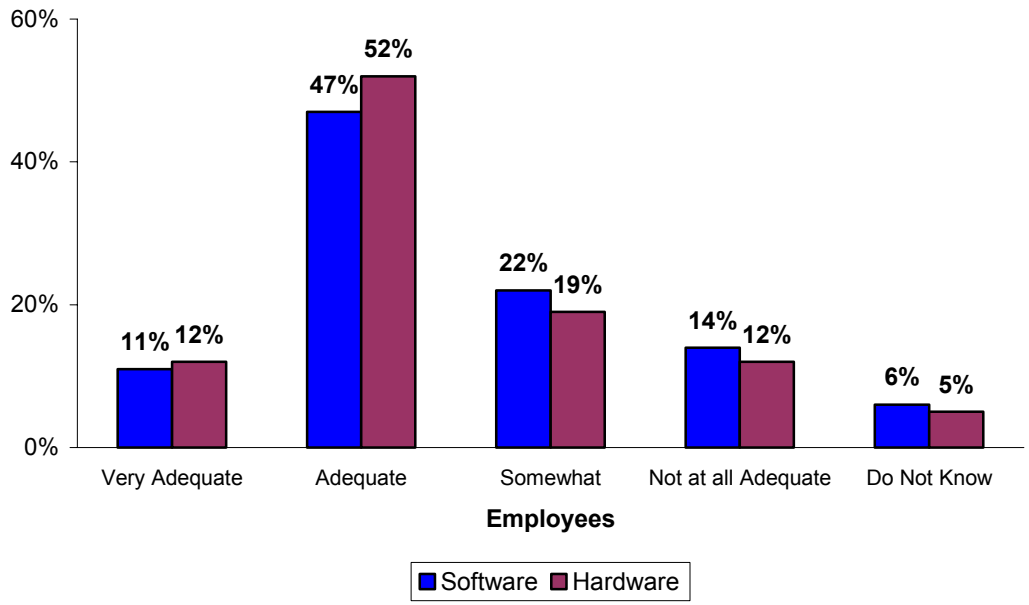
Figure 22. Availability of Network Support Personnel by Employee Size



When companies were asked about their last mile connectivity options over one-third stated resources are *adequate* or *very adequate*, while sixteen percent said *somewhat adequate* and another eighteen percent stated *not at all adequate.* Nearly one-third of the companies were not familiar with this term even though respondents were read a brief definition of "last mile connectivity." As noted with previously discussed Internet support issues, companies more extensively using computer and Internet applications, and in larger communities, are more likely to report having last mile connectivity options.

Most companies report adequate hardware (64%) and software (58%) technical support (Figure 23). Predictably, companies more extensively using computer and Internet applications, employing more employees and in larger communities are more likely to report the availability of hardware and software technical support resources.

Figure 23. Availability of Hardware - Software Technical Support



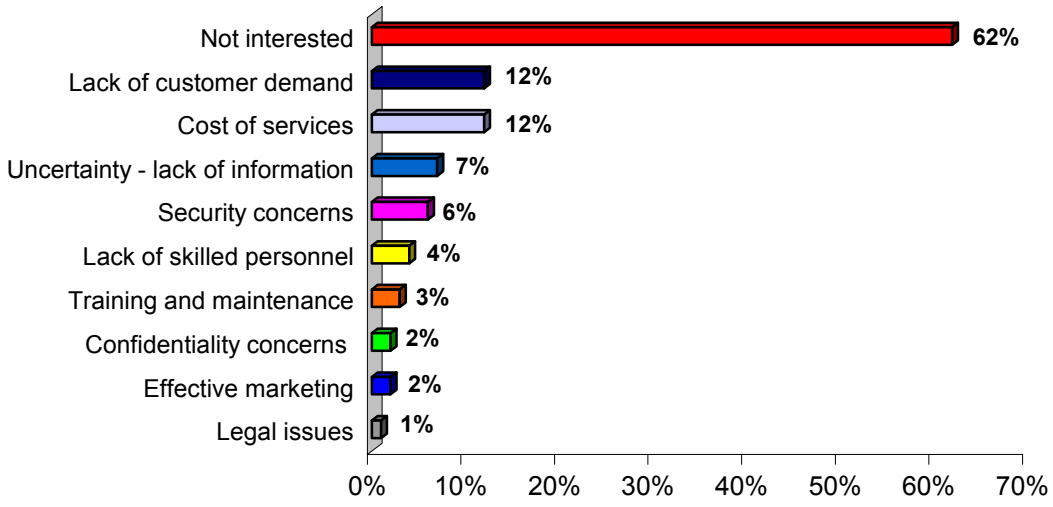
Nonusers of Information Technology

Companies who do not use computers or the Internet, called "nonusers," are predominantly in the wholesale/retail trade and service industries, have fewer than twenty employees and are located in smaller communities (population of 3,000 or less). Overall nonusers of information technology represent seventeen percent (n=165) of the entire business sample.

Nonusers were asked what barriers have prevented their company from acquiring Internet access. Most nonusers (62%) report they are not interested in acquiring an Internet connection. As Figure 24 demonstrates, the other most often mentioned barriers included lack of customer demand and cost of services.

Over one-fourth of nonusers (27%) interested in an Internet service connection report medium to high speed dial-up modem would best match the needs of their company. Another twenty-two percent of nonusers indicate that a high-speed digital subscriber line Internet service connection would be sufficient for their company's needs. In regards to cost of services, almost all nonusers (90%) interested in an Internet connection indicated $100 or less monthly would be affordable.

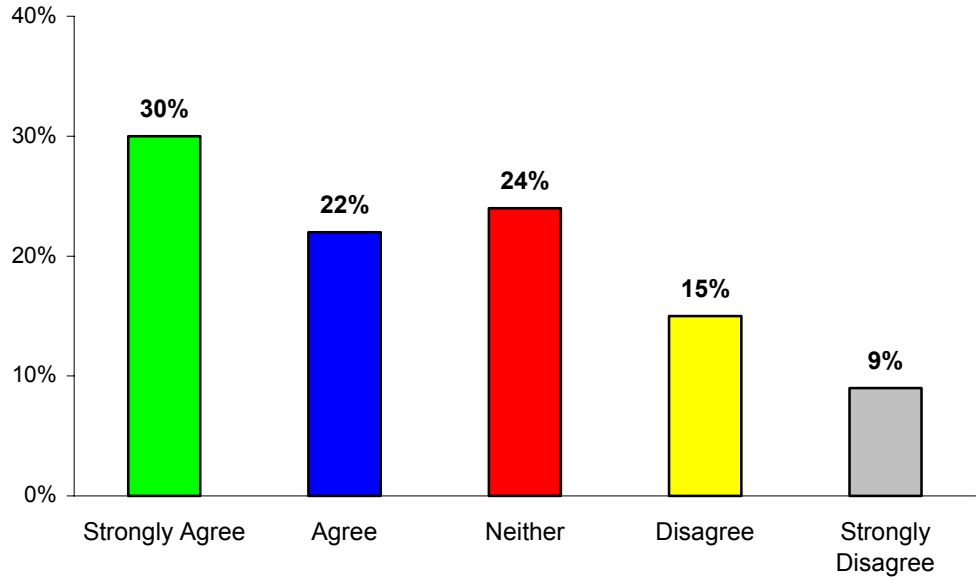
Figure 24. Barriers in Acquiring Internet Access



Internet Attitudes

Attitudes and perceptions about the Internet's usefulness, efficiency, cost, and marketing effectiveness are factors that effect how willing companies are to realize the technology's benefits. Several questions measured these considerations by asking about privacy, cost, and ease of access. Fifty-two percent of the entire business sample *agreed* or *strongly agreed* that the Internet will make their company more competitive, while one-fourth disagreed and twenty-four percent reported neither (Figure 25).

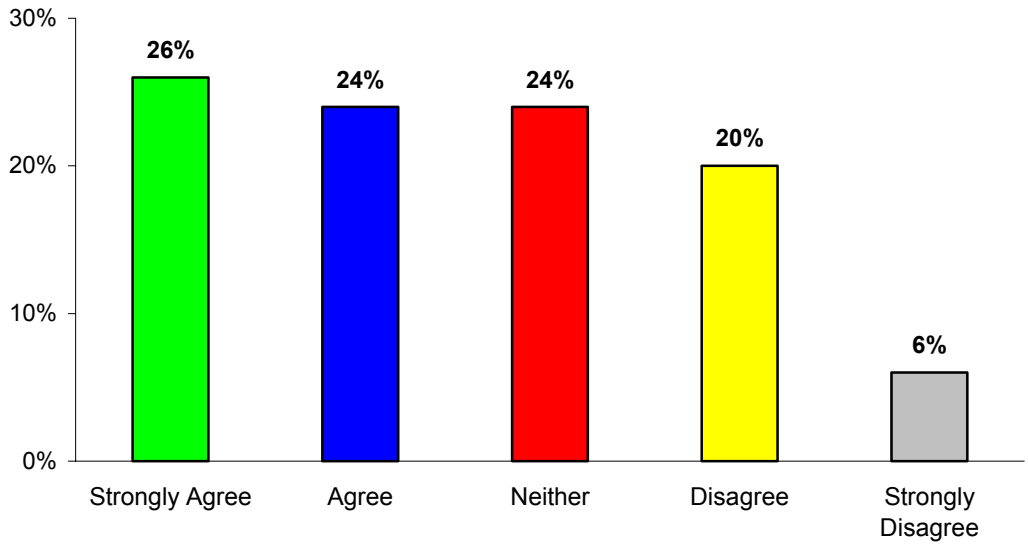
Figure 25. Internet Will Make My Company More Competitive



There are differences between companies by industry, level of information technology use, employee firm size and by community size. The finance and public administration industries were more likely to agree the Internet will make its companies more competitive compared to all other industry types. Information technology users, in companies with more than twenty employees, located in communities larger than 20,000 predictably are in most agreement.

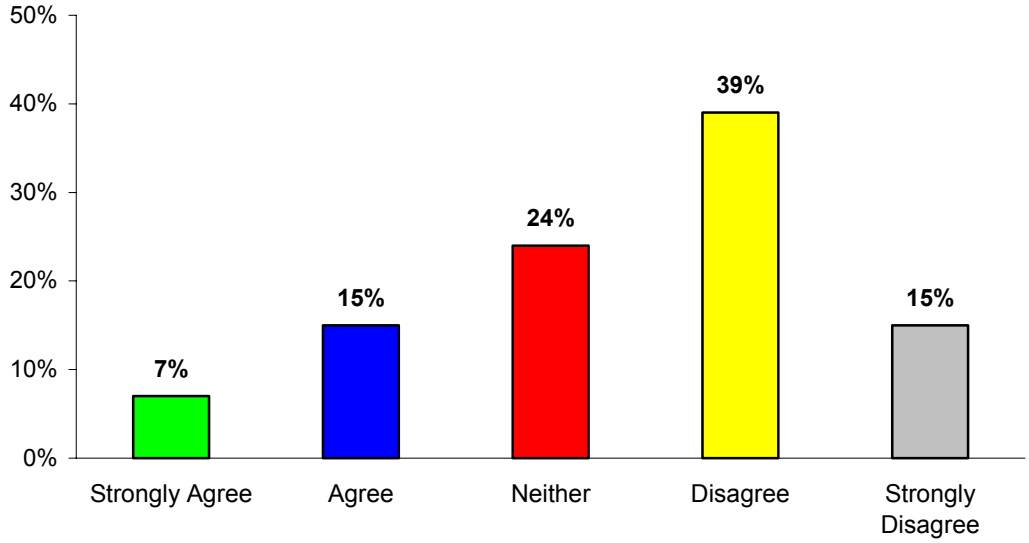
When read the statement, "my company would rather spend more money to improve our current mode of business rather then to try and do business over the Internet" companies are somewhat divided. Half of the companies *agreed*, one-fourth indicated *neither*, and another one-fourth *disagreed* with that statement (Figure 26). Differences exist between companies by the level of information technology use and employee firm size. Large companies (100 or more employees) using computer and Internet applications to manage its operations are more likely to disagree compared to other information technology users and smaller companies (less than 99 employees).

Figure 26. Rather Improve Current Mode of Business than Utilize the Internet



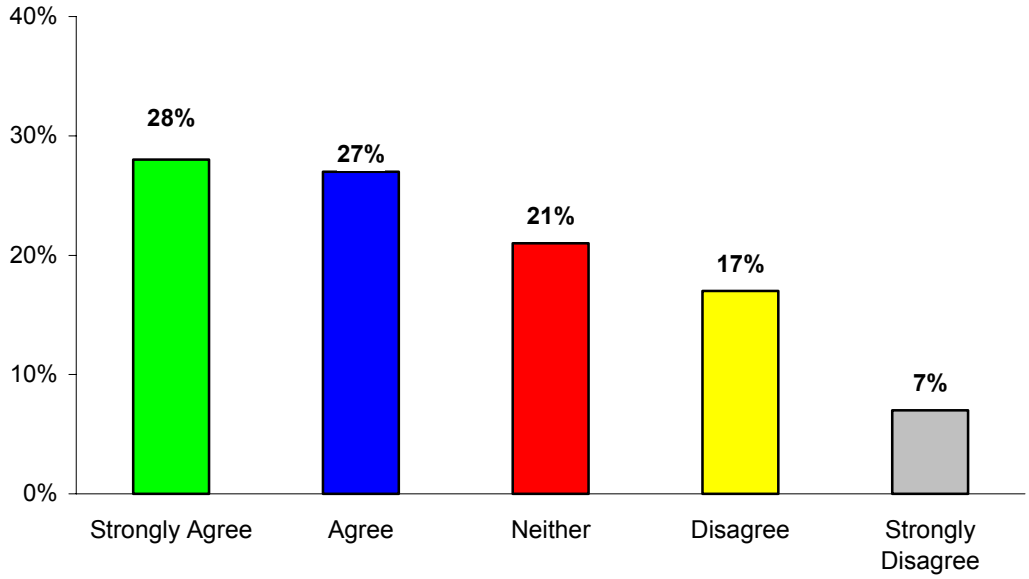
Over half of all the companies surveyed *disagreed* that doing business over the Internet will give their competitors access to too much information, one-tenth *agreed* and one-fourth reported *neither* (Figure 27). Predictably, differences exist between companies by the level of information technology use and employee firm size. Companies more extensively using computer and Internet applications and employing twenty or more employees were more likely to disagree compared to other information technology users and smaller companies.

Figure 27. Business on the Internet Gives Competitors too Much Information



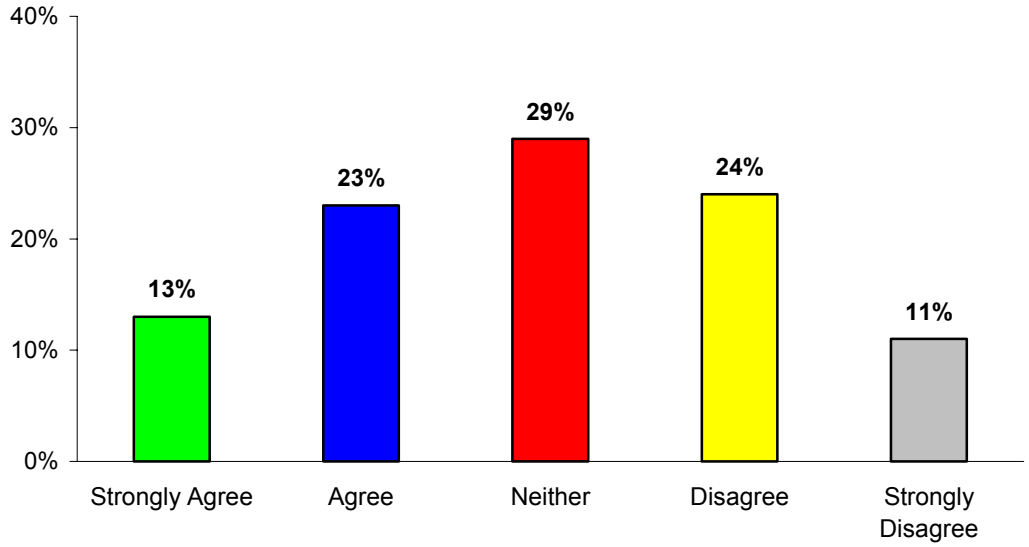
When read the statement, "conducting business over the Internet will allow my company to expand its customer base" the majority of companies agreed. Fifty-five percent of the entire business sample *agreed*, one-fifth indicated *neither*, and another one-fourth *disagreed* with that statement (Figure 28). Differences exist between companies by industry, level of information technology use and employee firm size. The finance and public administration industries were more likely to agree the Internet will provide opportunities to expand their customer base compared to all other industry types. Predictably, information technology users in companies located in larger communities (20,000 or more) are in most agreement.

Figure 28. Internet will Expand Companies Customer Base



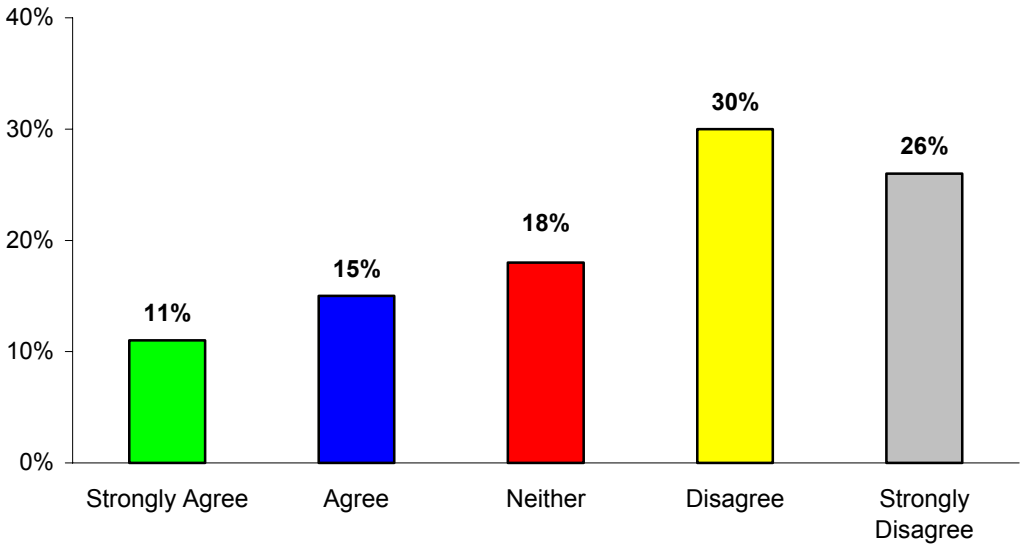
Companies attitudes were equally divided towards conducting business over the Internet only when most of their suppliers or customers use it. One-third of the companies *agreed*, one-fourth indicated *neither*, and another one-third *disagreed* with that statement (Figure 29). In general, companies' attitudes were similar with no differences existing by industry, level of information technology use, employee firm size or by community size.

Figure 29. Company would Only Consider Internet when Suppliers and Customers Use It



Over half of the all companies surveyed *disagreed* that their company lacks the technical knowledge to do business over the Internet, while one-fourth *agreed* and nearly one-fifth reported *neither* (Figure 30).

Figure 30. My Company Lacks the Technical Knowledge to do Business Over the Internet



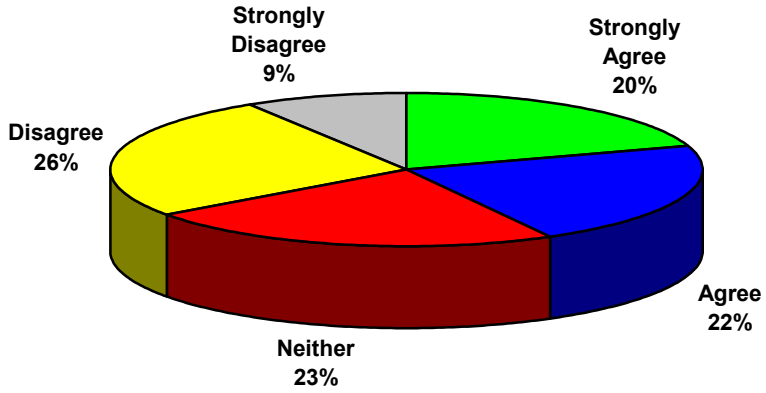
Predictably, there are differences between companies by the level of information technology use, employee firm size and by community size. Companies more extensively using computer and Internet applications and employing twenty or more employees in larger communities (20,000 or more) are more likely to disagree that their company lacks the technical knowledge to do business over the Internet compared to other information technology users and smaller companies.

When read the statement, "doing business over the Internet would involve high start-up costs" nearly half of the companies *disagreed*, one-fourth *agreed* and another one-fourth reported *neither* (Figure 30). Overall, companies' attitudes were similar with no differences existing by industry, level of information technology use, employee firm size or by community size.

Attitudes Towards Internet Privacy and Security

To evaluate how companies might feel about using services on the Internet, we asked a series of questions about financial transactions, security and privacy of personal information. In this study, forty-two percent of the entire sample agreed that they have concerns about security and conducting financial transactions over the Internet (Figure 31).

Figure 31. Internet Financial Transactions Do Not Provide Enough Security



There are differences between companies by the level of information technology use and employee firm size. Generally, companies who use the Internet more frequently expressed fewer concerns than did those

Table 17. Internet Financial Transactions Do Not Provide Enough Security by IT Use

ithin ITUSE

		ITUSE				
		IT Users	Light IT Users	I Only	NonUser	Total
Q48H Financial ransactions do provide enough security	Strongly Agree	13.9%	22.6%	34.2%	33.3%	19.7%
	Agree	20.9%	28.5%	23.7%	22.2%	22.5%
	Neither	25.0%	20.4%	23.7%	20.1%	23.4%
	Disagree	29.6%	22.6%	13.2%	18.8%	25.8%
	Strongly Disagree	10.5%	5.8%	5.3%	5.6%	8.6%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

who used it less often. Companies more extensively using computer and Internet applications (Table 17) and employing twenty or more employees (Table 18) are less likely to have concerns about security and conducting financial transactions over the Internet.

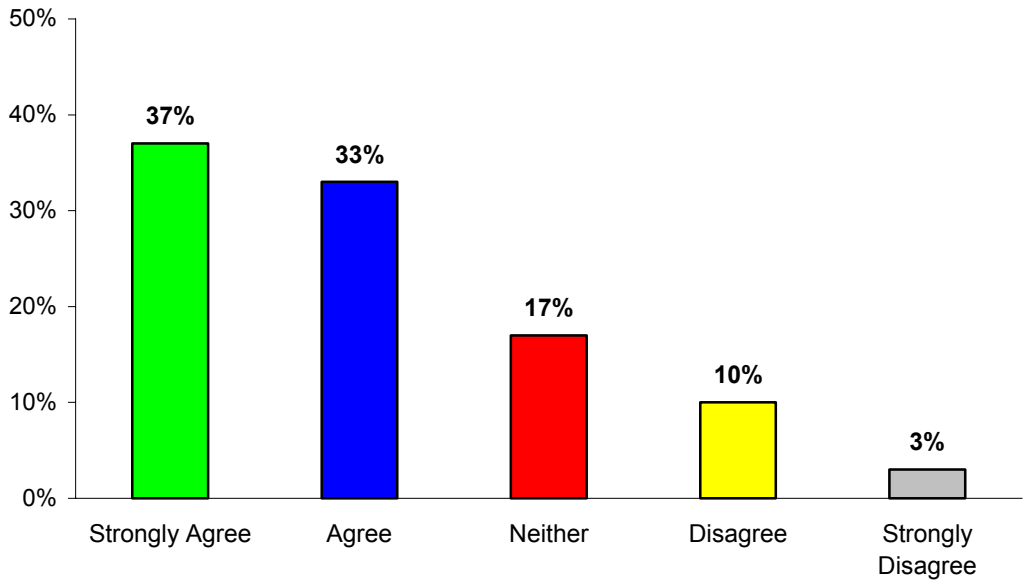
Table 18. Internet Financial Transactions do Not Provide Enough Security by Employee Firm Size

% within FSIZE Firm Empl Size

		FSIZE Firm Empl Size				
		1-4	5-19	20-99	100+	Total
Q48H Financial transactions do not provide enough security	Strongly Agree	27.6%	18.5%	16.5%	9.8%	19.7%
	Agree	23.9%	23.9%	18.7%	21.3%	22.5%
	Neither	22.9%	23.4%	19.4%	27.4%	23.4%
	Disagree	19.2%	25.7%	36.7%	28.7%	25.8%
	Strongly Disagree	6.4%	8.6%	8.6%	12.8%	8.6%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

We asked companies if they agreed it was important to offer services and products on the Internet. Seven out of ten companies in the entire business sample *agreed* or *strongly agreed*, while a little over one-tenth disagreed and another one-tenth reported neither (Figure 25).

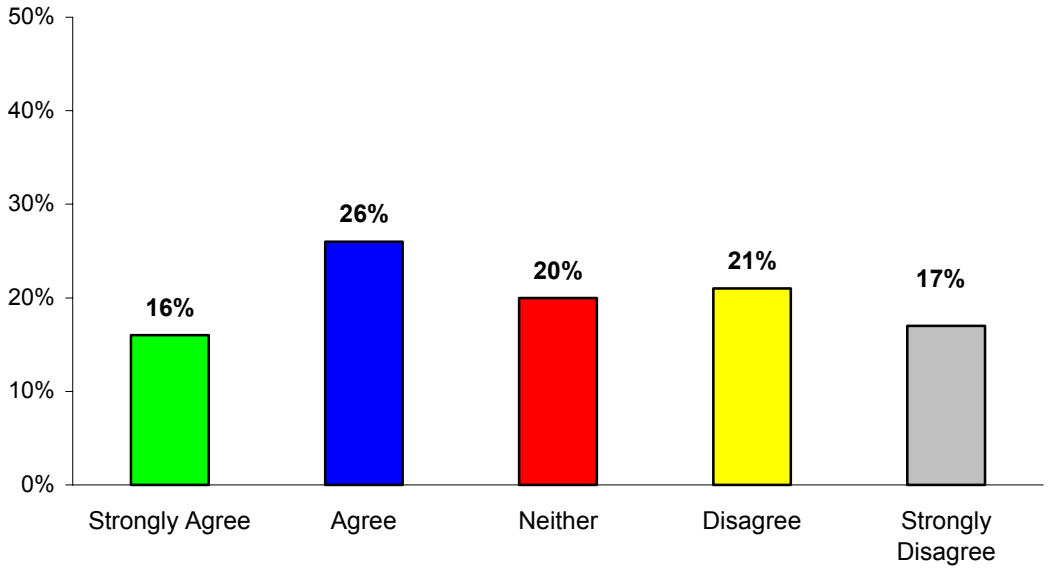
Figure 32. Important to Offer Internet Services and Products



As one would presume, there are differences between companies' attitudes by the level of information technology use. Three-fourths of companies more extensively using computer and Internet applications agreed it was important to offer services and products online compared to light information technology (67%), Internet only (58%) and nonuser (51%) companies.

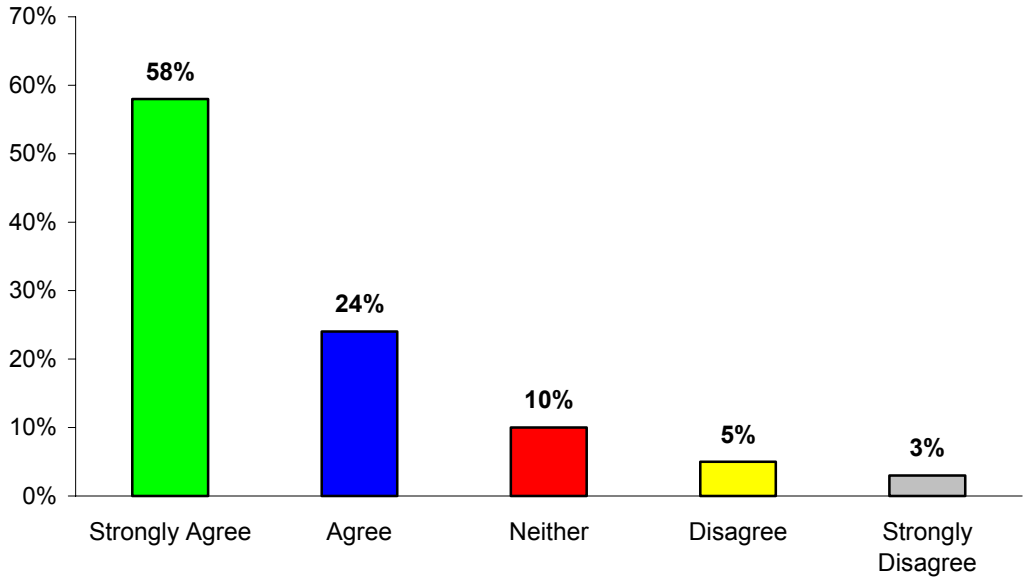
We asked companies how they felt about sharing credit card information for online transactions. As shown in Figure 33, the level of concern is evenly divided.

Figure 33. Comfortable Providing Credit Card Information Online



There are differences between companies' attitudes by the level of information technology use and by employee firm size. Companies more extensively using computer and Internet applications and larger firms (over 20 employees) were more likely to report being comfortable providing credit card information for online transactions.

Figure 34. Privacy of Personal Information is a Concern



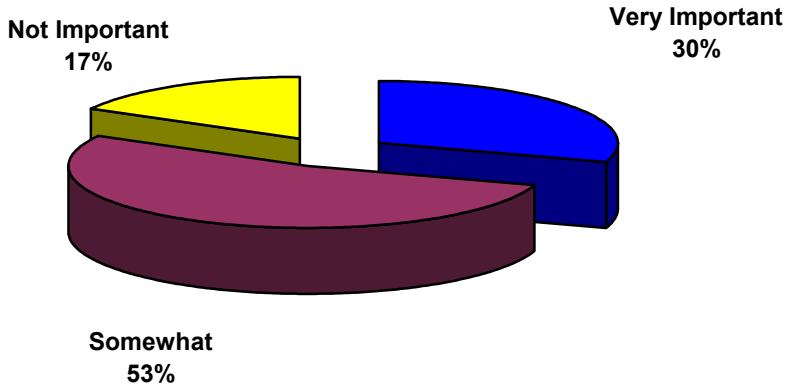
Eighty-two percent of the entire business sample *agreed* or *strongly agreed* that maintaining privacy of personal information is a concern (Figure 34). This was true across all information technology user groups, industries, firm sizes and company locations.

Internet Government Services

To evaluate how companies feel about using government services on the Internet, we asked a series of questions about past, current and potential use of various services.

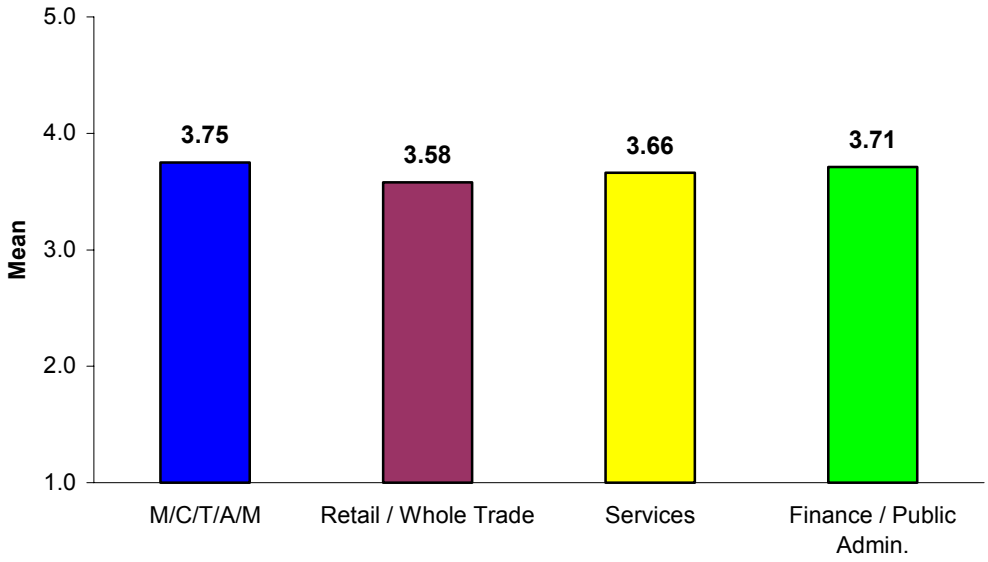
We began by asking the entire business sample the importance of the State providing online government services. As shown in Figure 35, nearly one-third of the companies indicate it is *very important*, over half said *somewhat important* while less than one-fifth indicate it was *not important at all that* the State provide online government services. As one would presume, there are differences between companies' attitudes by the level of information technology use. Nine out of ten companies extensively using computer and Internet applications agree it is important that the State offer online services compared to light information technology (84%), Internet only (71%) and nonuser (61%) companies.

Figure 35. Importance of State Providing Online Government Services



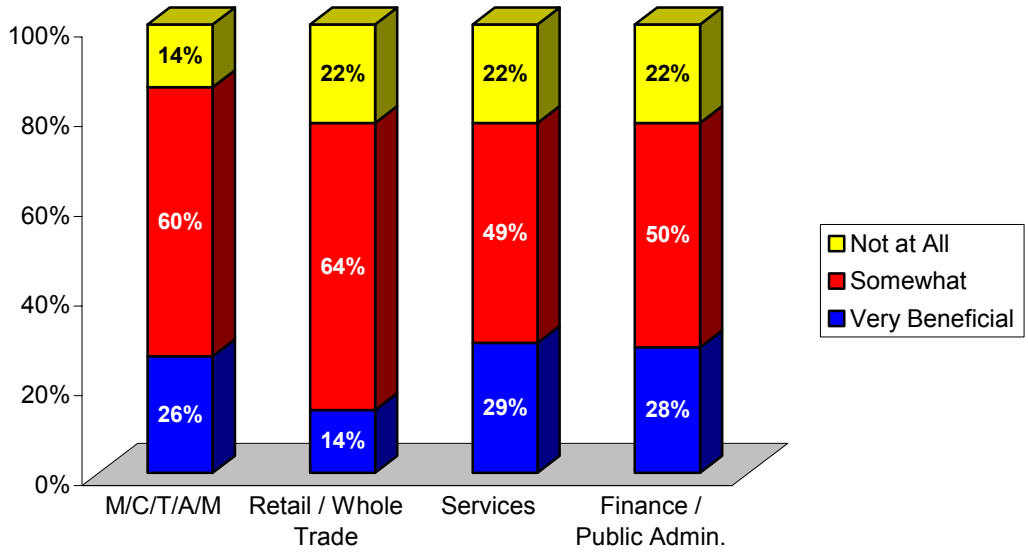
Nearly three-fourths of companies (73%) using the Internet report accessing government services. Of these companies, sixty-one percent report being *very satisfied* or *somewhat satisfied*, almost one-third (29%) were *neutral* and one-tenth are *dissatisfied*. Figure 36 presents the mean government services satisfaction rating by industry, where "1" means *very dissatisfied* and "5" means *very satisfied*.

Figure 36. Mean Online Government Service Ratings by Industry



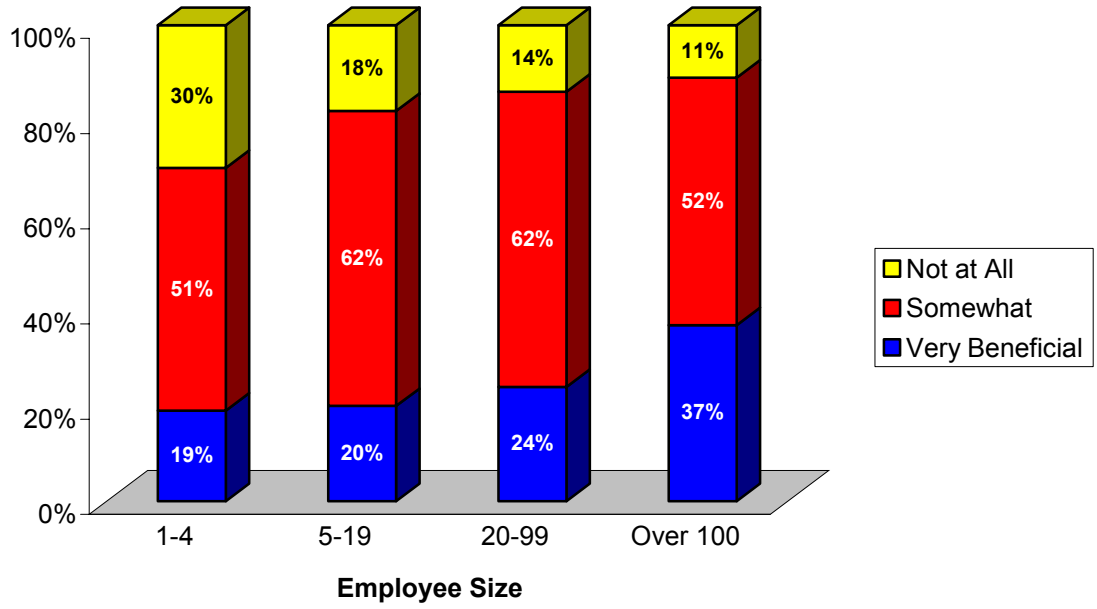
When asked how beneficial expanded state government Internet services would be to their company, over three-fourths of the entire business sample reported *very* or *somewhat beneficial.* Figure 37 presents the importance to companies of expanded state government Internet services by industry.

Figure 37. Expanded State Govt. Internet Services Beneficial by Industry



As shown in Figure 38 larger employee firms are more likely to report expanded state government Internet services would be beneficial.

Figure 38. Expanded State Govt. Internet Services Beneficial by Employee Size



Companies reporting that online government services would not be beneficial were asked why they felt that way. The main reasons cited include they do not have a need for computers and the Internet (60%), they are concerned about privacy or security issues (12%) and it is easier to use traditional methods of communication.

Using Internet Government Services. The entire business sample was read a list of government services and asked if they would consider using these services if they were available on the Internet. The most likely Internet government services companies would consider using includes accessing road conditions and emergency information (76%), researching legal issues, regulations or laws (75%), accessing online government services directories (74%), posting employment listings (71%), filing wage reports or unemployment insurance forms (70%), accessing training resources (69%), contacting state legislators or government officials (68%), tracking legislation (66%) and accessing economic or trade information (65%). Companies located in communities larger than 20,000 were more likely to report they would consider using the Internet to file taxes, pay traffic citations/court fees, filing wage reports or unemployment insurance forms, post employment listings, research legal issues, access training resources or contract state legislators or government officials.

Figure 39a presents the percentages of companies who would consider using e-government related filing, access, and state required forms and payments services.

Figure 39a. Internet Government Services would Consider Using

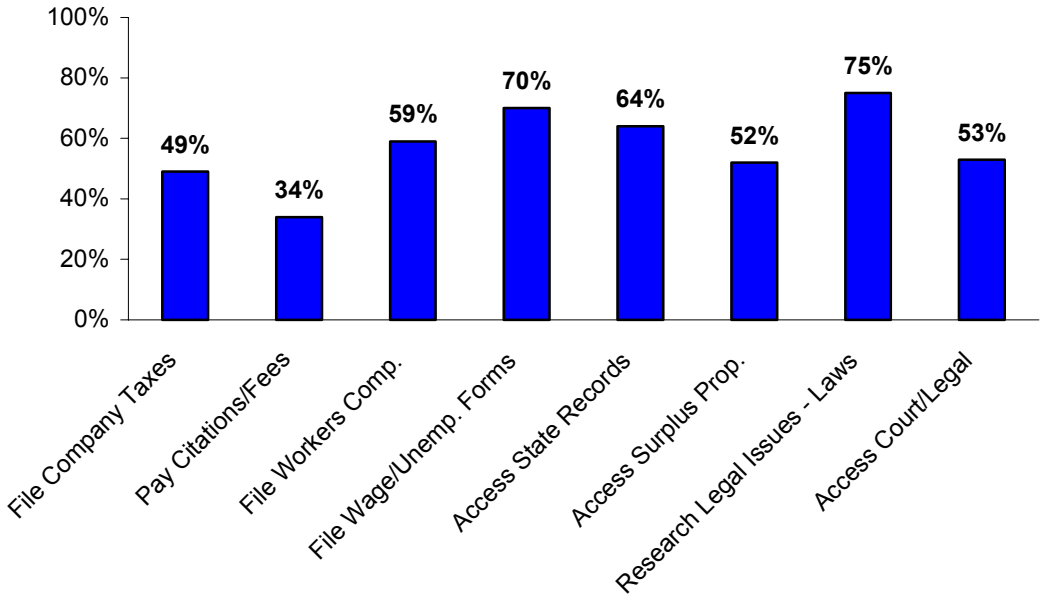


Figure 39b presents the percentages of companies who would consider using e-government related business services.

Figure 39b. Internet Government Services would Consider Using

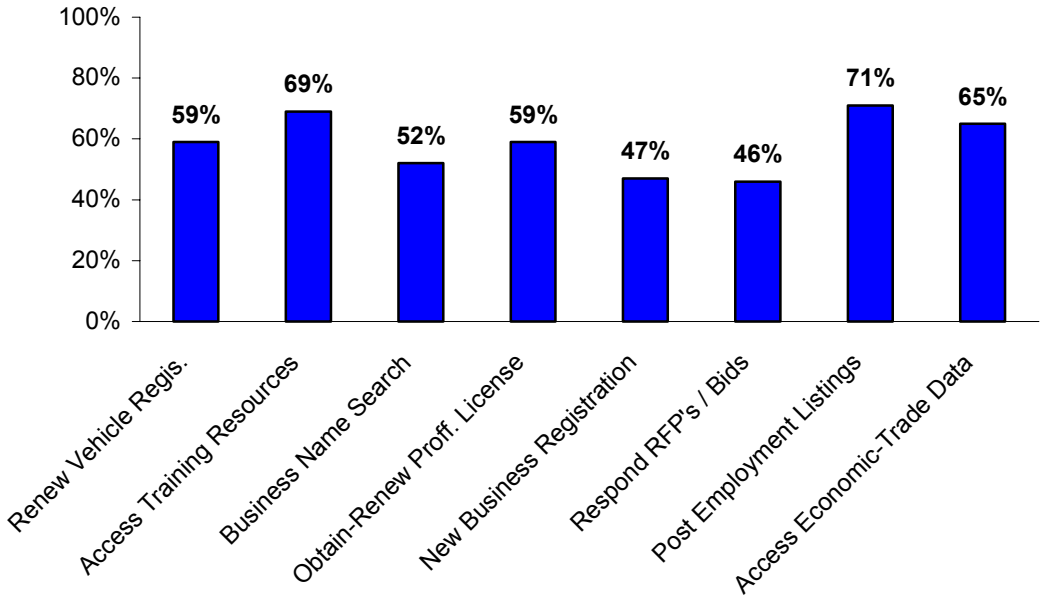
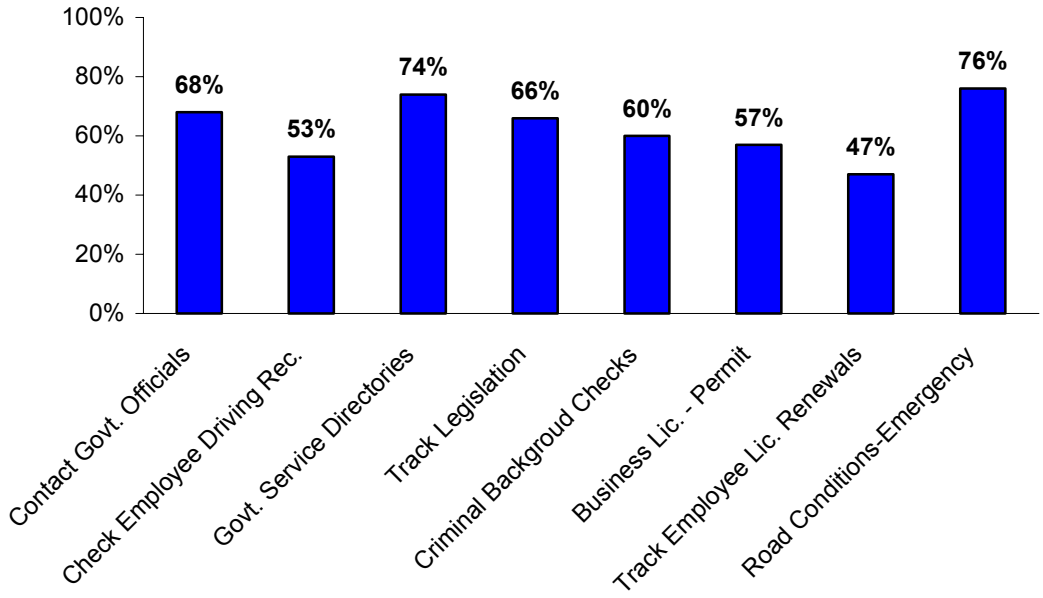


Figure 39c presents the percentages of companies who would consider using e-government related research and informational services.

Figure 39c. Internet Government Services would Consider Using



Attitudes Towards State Governments Role and the Internet

Several questions measured companies' perceptions of state government's priorities, willingness to share information to identify wrongdoing or misrepresentations, develop partnerships and safeguard personal information.

Two-thirds of the entire business sample agreed that online services should be a state government priority. This was consistent across all industries, firm sizes and company locations. Predictably, there are differences between companies attitudes by the level of information technology use. Nearly three-fourths of companies extensively using computer and Internet applications agree that online services should be a state government priority compared to light information technology (60%), Internet only (50%) and nonuser (54%) companies (Table 19).

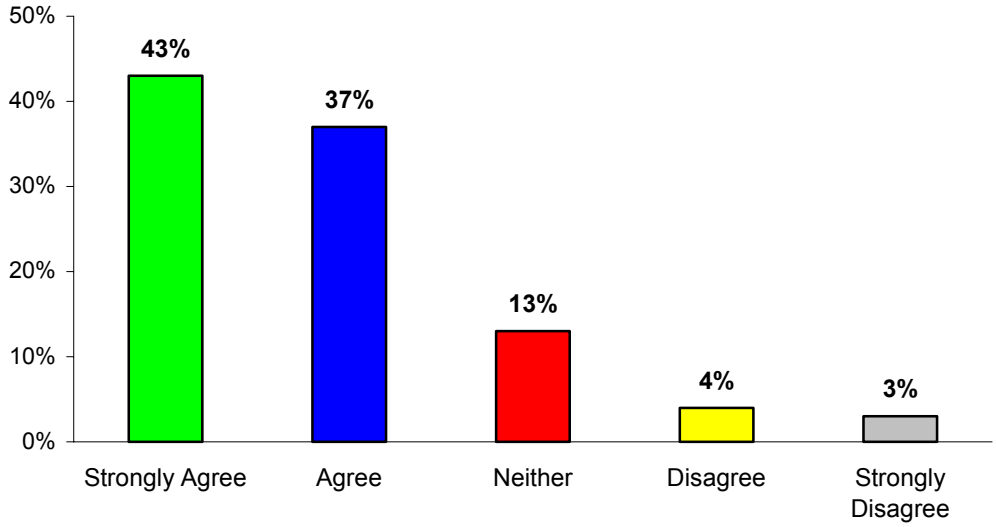
Table 19. Online Services should be a State Govt. Priority by IT Use

ithin ITUSE

		ITUSE				
		IT Users	Light IT Users	I Only	NonUser	Total
Q50A Priority for state government	Strongly Agree	37.1%	29.5%	17.5%	27.2%	33.1%
	Agree	35.1%	30.9%	32.5%	26.5%	32.7%
	Neither	15.2%	23.0%	25.0%	25.8%	18.9%
	Disagree	9.0%	12.9%	15.0%	15.2%	11.1%
	Strongly Disagree	3.6%	3.6%	10.0%	5.3%	4.2%
		100.0%	100.0%	100.0%	100.0%	100.0%

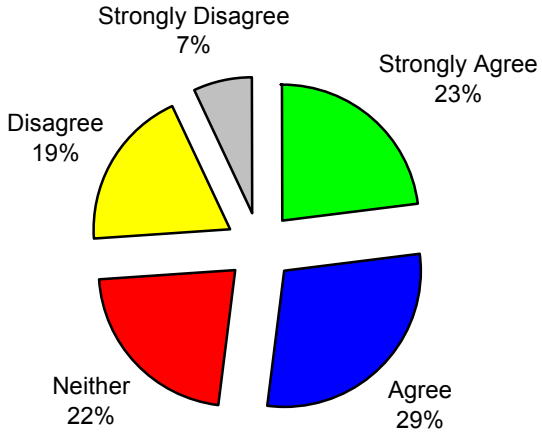
When asked if government agencies should share information with each other in order to identify wrongdoing or misrepresentations, eighty percent of the entire random business sample *agreed* or *strongly agreed* with that statement (Figure 40). This attitude was true across all information technology user groups, industries, firm sizes and company locations.

Figure 40. Government Agencies Should Share Information to Identify Wrongdoing



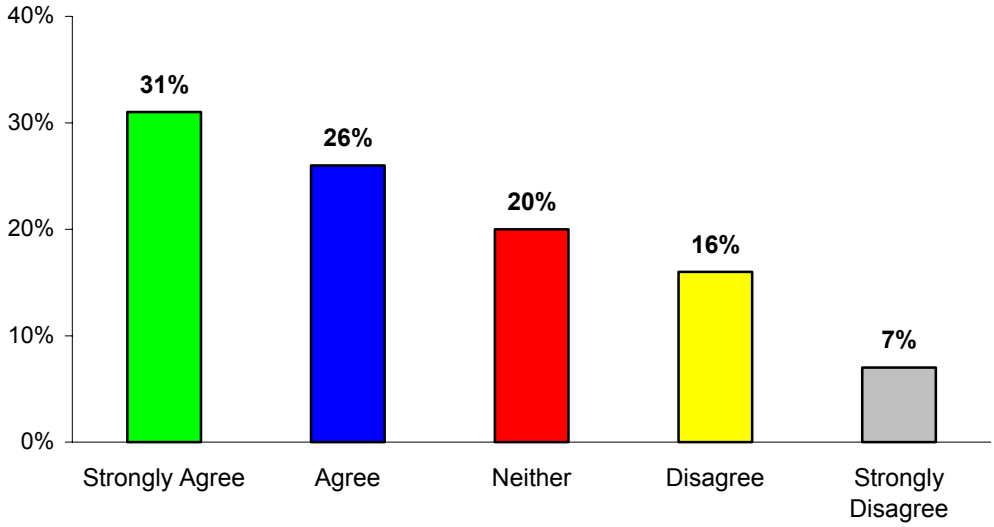
Whether businesses feel confident that the State will use their personal information appropriately is another area pertinent to e-government services. Whether or not people trust the state government to responsibly share personal data may have a dramatic effect on how well businesses accept e-government services in the future. Figure 41 illustrates a mixed level of confidence in state government handling personal, confidential information. Over half of the companies surveyed expressed confidence in state government safeguarding personal information, while the other companies either disagreed or did not share their opinion.

Figure 41. State Government can be Trusted with Personal Information



When we asked if companies would feel uncomfortable with state government maintaining a master profile containing their public information to better deliver services, the responses were, again, assorted. Fifty-seven percent of the companies surveyed agreed they would be uncomfortable with the state government maintaining a master profile, twenty-two percent disagreed, and twenty-one percent report they are neither in agreement or disagreement (Figure 42).

Figure 42. Uncomfortable with State Government Maintaining a Master Profile



Two-thirds of the companies agreed that private industry and government should partner more on technology issues, one-fifth report they were neither in agreement or disagreement, and one-tenth disagreed. Predictably, there are differences between companies' attitudes by the level of information technology use. Companies using information technologies extensively were more likely to agree that private industry and government should partner more on technology issues (Table 20).

Table 20. Private Industry and Govt. should Partner more on Technology Issues

% within ITUSE

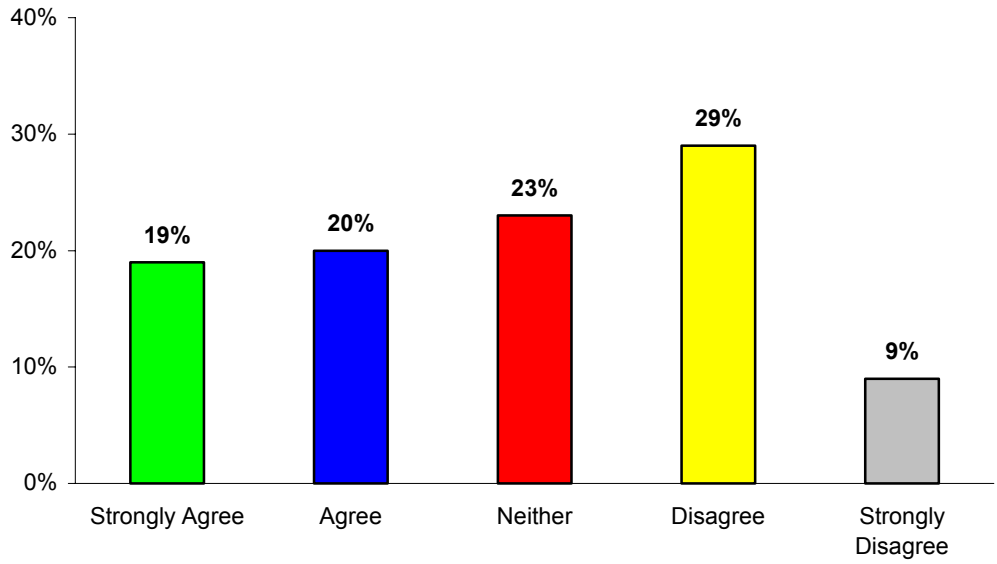
		ITUSE				
		IT Users	Light IT Users	I Only	NonUser	Total
Q50E Private industry and government should partner	Strongly Agree	29.3%	25.0%	12.8%	17.2%	25.7%
	Agree	43.9%	42.1%	35.9%	35.9%	41.8%
	Neither	17.6%	19.3%	35.9%	30.3%	21.0%
	Disagree	7.2%	9.3%	10.3%	13.8%	8.8%
	Strongly Disagree	2.0%	4.3%	5.1%	2.8%	2.7%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

Attitudes Toward Providing Internet Government Information or Services

In assessing other attitudes toward e-government services, we asked companies some additional questions about their ideas of computer-based delivery of government services. We find there are contradictions in the sample when it comes to evaluating the Internet's usefulness for government services. Most companies agree having government services on the Internet would be convenient and allow better access to information. Yet contradictory to those opinions some companies also agree that most would prefer to see someone in person when using a government service, and that they are concerned about the quality of services they would receive on the Internet.

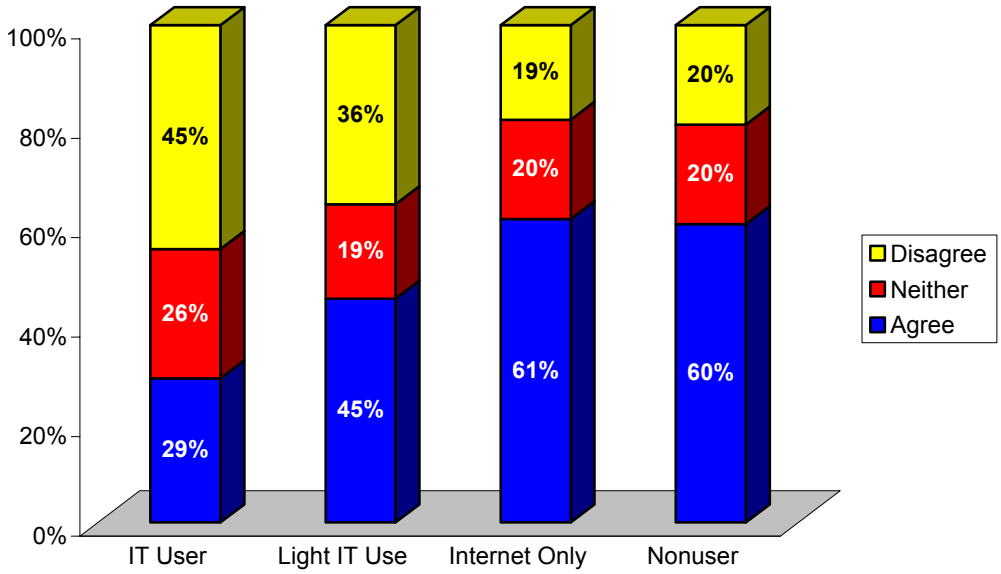
Overall, when asked if they preferred to see someone in person if they needed something from a government office companies were evenly divided. Thirty-nine percent of the entire business sample *agreed* or *strongly agreed* that they would prefer to see someone in person, while thirty-eight percent disagreed and twenty-three percent reported neither (Figure 43).

Figure 43. Prefer to See Someone in Person



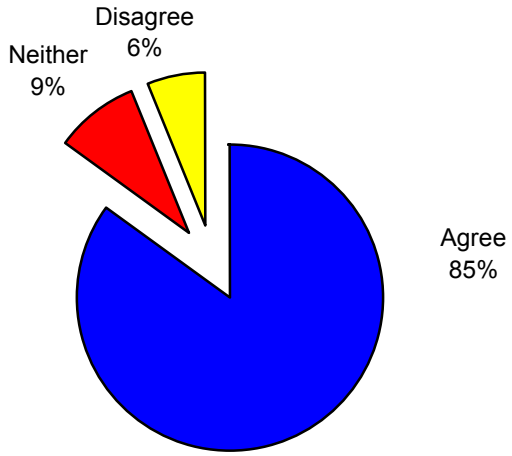
There are differences in preferences between companies by the level of information technology use, employee firm size and by community size. Companies more extensively using computer and Internet applications (Figure 44) and employing twenty or more employees in larger communities (20,000 or more) are more likely not to prefer personal contact if they needed something from a government office.

Figure 44. Prefer to See Someone in Person by IT Use



When asked if having government information on the Internet would be more convenient and save time, eighty-five percent of the entire business sample agreed (Figure 45). This was true across all industry groups, employee firm sizes and company locations. Predictably, companies more involved with information technologies were more likely to agree that having government information on the Internet would be a convenience.

Figure 45. Internet Government Information would be Convenient and Save Time



Almost all companies agreed that having Internet access would allow greater access to government information (Figure 46). This was true across all industry groups, employee firm sizes and company locations. As one would assume, companies more involved with information technologies were more likely to agree that having government information on the Internet would allow better access to government information.

Figure 46. Internet would Allow Better Access to Government Information

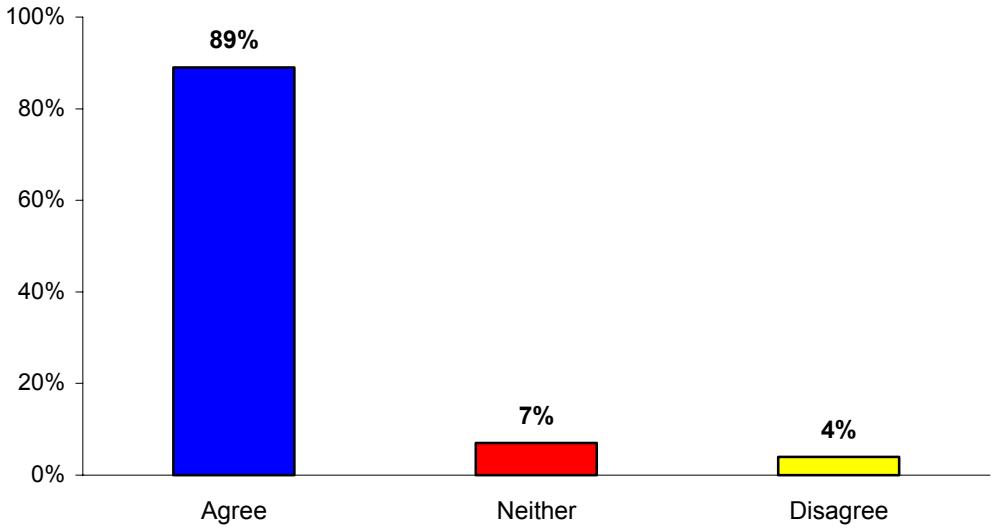
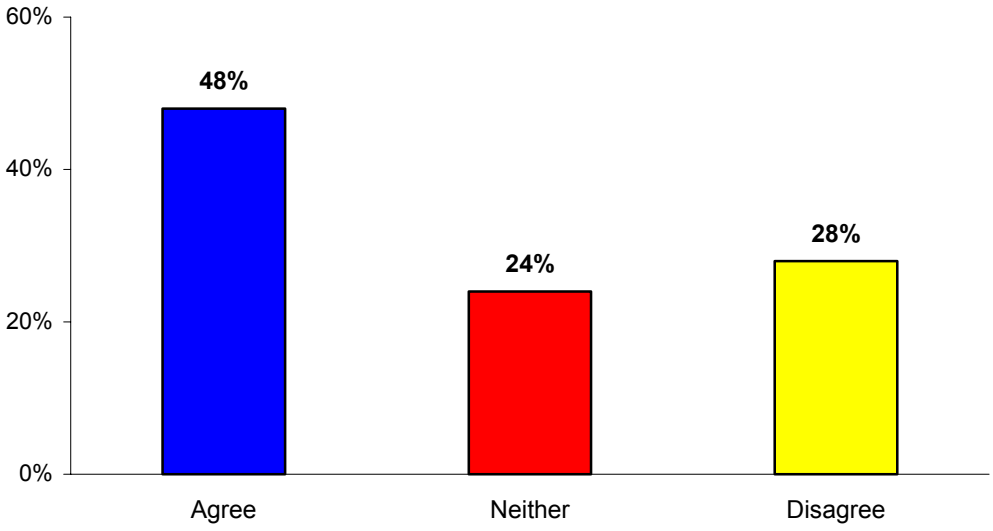


Figure 47 presents companies' opinions in regards to the quality of service the government would provide through the Internet.

Figure 47. Concerned about the Quality of Internet Government Services

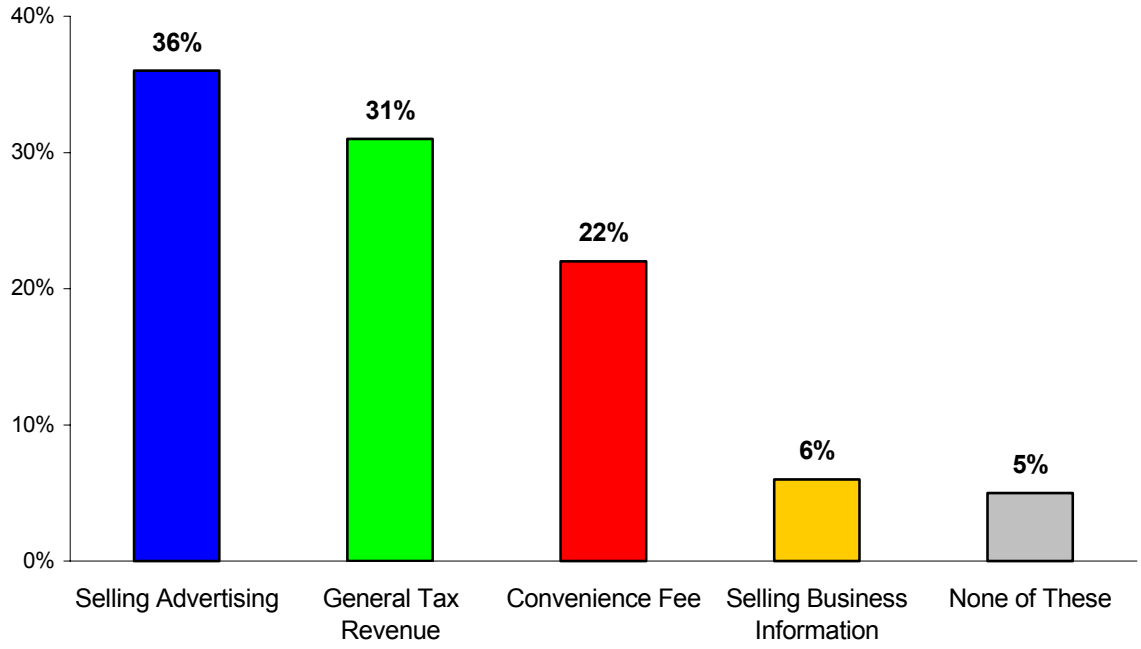


Nearly half of the entire business sample *agreed* or *strongly agreed* that they are concerned about the quality of Internet government services, while twenty-eight percent disagreed and twenty-four percent reported neither. There were no differences among companies in regards to the type of information technology user, industry, firms employee size or community size.

Funding Online Government Services

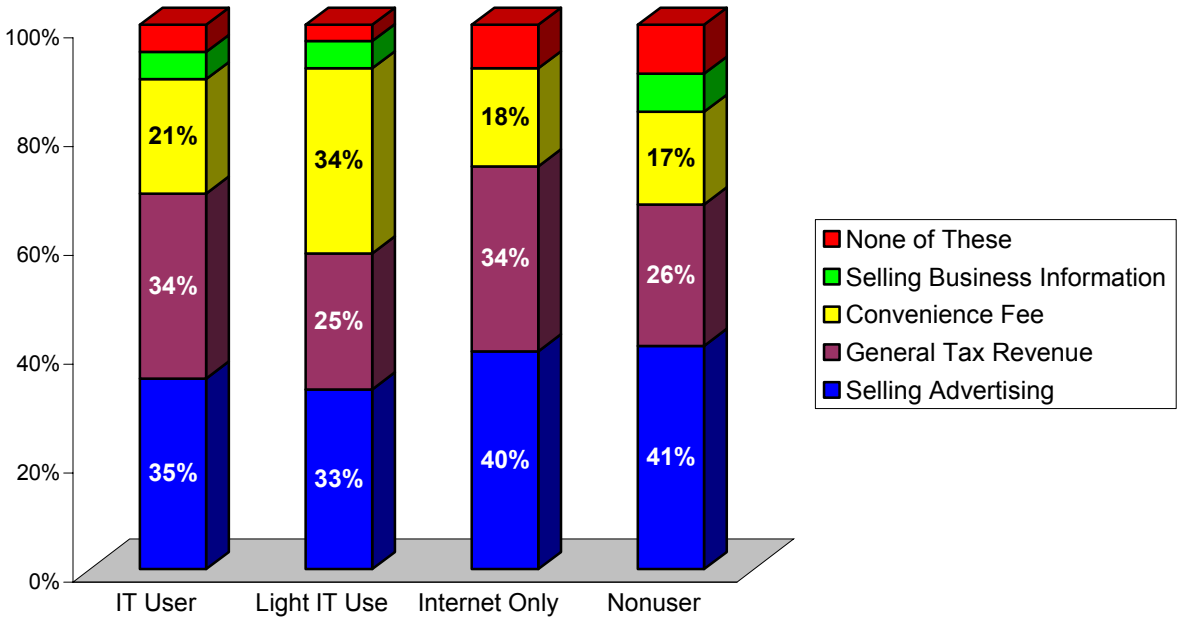
We suggested four methods of funding the costs related to providing online government services and asked companies their preference. Opinions in regards to financially supporting e-government services were most favorable toward two plans: (1) selling advertising on the computer screen to underwrite the costs of the service or (2) using general tax revenue. Figure 48 presents the percentages of companies who found these funding options acceptable.

Figure 48. Online Government Services Funding Preferences



All Information technology users and nonusers prefer selling advertising on the computer screen or using general tax revenue to underwrite the costs of the online government services (Figure 49).

Figure 49. Online Government Services Funding Preferences by IT Use



Conclusions

Companies believe that the Internet can make government more convenient and allow better access to information, and there is evidence that certain e-government services would be welcome on the Internet. The services companies appear to be most interested in include: accessing road conditions and emergency information, researching legal issues, regulations or laws, accessing online government services directories, posting employment listings, filing wage reports or unemployment insurance forms, accessing training resources, contacting state legislators or government officials, tracking legislation and accessing economic or trade information.

However, this study identifies some difficulties with respect to access to computers and the Internet that need to be addressed. For example, this study indicates that although computer and Internet use among North Dakota companies is at high overall levels, employee firm size and community location factors differentiate how or whether a company uses these Internet technologies.

In this study, there were significant differences in the business use of information technologies by industry, employee firm size and the companies' location. Smaller companies located in communities of less than 3,000 show lower use of the Internet, while in regards to industry, the finance/public administration, services and manufacturing, construction, transportation, agriculture and mining industries generally show more extensive use of information technologies, compared to the retail and wholesale trade industries. Although e-government will not entirely replace other methods the state currently uses to deliver services, moving services to the Internet does present the chance of disadvantaging these companies.

Dial-up modems are the predominant Internet connection vehicle, and the majority of companies are satisfied with their connection speeds and Internet providers. Even so, companies' perceptions regarding government services on the Internet are cautious with respect to trusting the government's handling of personal and financial information and with respect to preferring to interact with a person when using a government service. In general, this study suggests companies are supportive of the state providing online government services and believe these services would be beneficial. Overall, Internet interest and usage should be positive factors to compliment e-government services since this study suggests companies believe online services should be a state government priority, although the distrust factor with personal financial information will be a barrier and will have to be addressed.

The issues for some companies are Internet usefulness, efficiency, cost, and marketing effectiveness. For example, many small companies are not Internet users. Factors that should not be overlooked are the cost of computers and, beyond access and ownership, are the issues of how companies perceive computers or the Internet. The question that comes to mind, since the majority of businesses in North Dakota have less than four employees, is how these companies would respond to government services that were delivered on the Internet. Simple lack of understanding the usefulness of the Internet or perceived difficulty with it discourages the prospects for adopting e-government.

In this study, we identified some contradictory beliefs: while information technology users and nonusers alike agree the Internet would allow companies better and more convenient access to government information and services, concerns exist around potential service quality and the presence of a person with whom one could interact. In addition, most companies agree that it is important to offer services and products on the Internet yet many are concerned about financial transactions, security and privacy of personal information.

The state will have to be aware of these perceptions and develop a marketing plan to convince companies that e-government is a worthwhile investment and capable of improving government. Findings around privacy and security are well defined, companies are concerned about privacy and are worried about sharing credit card numbers or financial information on the Internet with government agencies. Smaller companies especially seem to have the least confidence in government handling their personal, confidential information. Companies are concerned about security and privacy of personal information over the Internet. These privacy and security concerns will have to be addressed to the point that e-government would rely on personally identifiable information.

Opinions in regards to financially supporting e-government services were most favorable toward two plans: selling advertising on the computer screen to underwrite the costs of the service or using general tax revenue. In essence, companies believe that the users and the general public, presumed beneficiaries of the service, should pay – directly tax revenue or indirectly by having to view ads – for e-government. In general, it seems as if companies perceive it as a value-added service whose costs should be passed on to its users and shared by tax payers.

These results highlight some possible directions for state efforts:

- Develop marketing strategies that call attention to privacy and security standards that address companies' concerns.

- Develop marketing strategies to target industries using the Internet the least. This might involve various settings, technologies, and/or interfaces that can address concerns about the usefulness of the Internet and e-government services.

- Continue to measure Internet use in order to assess who does and does not use the Internet, and why.

In summary, plans to provide Internet government services to companies has the potential to achieve cost savings and efficiency, and to provide new ways that government can be accessible to North Dakota businesses. This study presents a picture of what companies believe and how they interact with computers and Internet technologies, and it should serve to contribute ideas to policy makers in respect to the role of government in regards to information technology services.

Appendix A: Survey Instrument

North Dakota Business Computer and Internet Use Survey

Hello my name is _____ calling from the Social Science Research Institute at the University of North Dakota. We are conducting a survey regarding computers and the Internet sponsored by the ND Information Technology Department.

Would it be possible to speak to the person who would be most familiar with the Internet and computer technologies used by your company.

The purpose of the study is to better understand the demand for network services and surrounding issues of cost and support. The ND Information Technology Department believes it is extremely important to document companies Internet needs and wants.

Furthermore, this information will be used by the ND Legislature to identify potential Internet policy and budget implications that need to be addressed.

You should know that all information we collect will be kept strictly confidential the survey is estimated to take 10 to 14 minutes. May we begin?

1. Does your company use computer applications to manage its operations or run the business?

   |__| 1. Yes
   |__| 2. No
   |__| 3. Plan to use in the next year
   |__| 4. DK
   |__| 5. Refused

2. Does your company use wireless technology?

   |__| 1. Yes
   |__| 2. No
   |__| 3. Plan to use in the next year
   |__| 4. DK
   |__| 5. Refused

3. How important would you say using a computer and other Internet business practices will be to the future of your company?

   |__| 1. Very Important
   |__| 2. Important, or
   |__| 3. Not Important
   |__| 4. DK
   |__| 5. Refused

4. Does your company have Internet access now?

   |__| 1. Yes (GO TO QUESTION 5)
   |__| 2. No
   |__| 3. Plan to use next year
   |__| 4. DK
   |__| 5. Refused

   SKIP TO QUESTION 38
   ==========

5. Would you say your company uses the Internet extensively, moderately, or just on a limited basis?

|__| 1. Limited Basis
|__| 2. Moderately
|__| 3. Extensively
|__| 4. DK
|__| 5. Refused

6. Next, what would you say is the primary reason your company uses the Internet?

|__| 1. Pressure from competitors
|__| 2. Gaining competitive advantage
|__| 3. Exploring a new mode of business
|__| 4. Gathering information and research
|__| 5. Acquiring information from suppliers
|__| 6. Gain access to link vendors and suppliers
|__| 7. To send orders to suppliers
|__| 8. To receive orders from customers
|__| 9. To conduct research sharing data/information
|__| 10. For inventory control and management
|__| 11. For online banking and other financial services
|__| 12. To advertise job vacancies or recruiting employees
|__| 13. Other reason mentioned (GO TO QUESTION 7)
|__| 14. Refused

SKIP TO QUESTION 8
==========

7. Other primary reason this company uses the Internet.

_____

8. Does your company use electronic mail (e-mail)?

|__| 1. Yes
|__| 2. No
|__| 3. Plan to use in the next year
|__| 4. DK
|__| 5. Refused

IF (#8 = 1) GO TO #9

SKIP TO QUESTION 10
==========

9. Would you say your company uses e-mail extensively, moderately, or just on a limited basis?

|__| 1. Limited Basis
|__| 2. Moderately
|__| 3. Extensively
|__| 4. DK
|__| 5. Refused

10. Is your companies Internet connection provided through your telephone line, your cable line or wireless or satellite service?

|__| 1. Telephone line (GO TO QUESTION 12)
|__| 2. Cable line
|__| 3. Leased Service (GO TO QUESTION 15)
|__| 4. Wireless or satellite (GO TO QUESTION 17)
|__| 5. Another source mentioned (GO TO QUESTION 11)
|__| 6. DK
|__| 7. Refused

SKIP TO QUESTION 18
==========

11. Other internet connection source.

_____

12. What is the maximum speed you access the Internet at your company?

|__| 1. Does Not Know
|__| 2. Modem less than 56k
|__| 3. Modem @ 56k
|__| 4. Modem (not sure)
|__| 5. Asymmetric DSL (share w/phone line) - ADSL,RADSL,
|__| 6. Symmetric DSL (can't share w/phone line) - HDSL,SDSL,IDSL
|__| 7. Other (GO TO QUESTION 13)
|__| 8. DK
|__| 9. Refused

IF (#12 < 4) GO TO #14

SKIP TO QUESTION 18
==========

13. Other speed of the companies internet connection.

_____

SKIP TO QUESTION 18
==========

14. Is high-speed Internet access available in your area?

|__| 1. Yes
|__| 2. No
|__| 3. Will be Available in the Next 12 Months
|__| 4. DK
|__| 5. Refused

SKIP TO QUESTION 18
==========

15. What is the maximum speed you access the Internet through a leased service at your company?

|__| 1. Dedicated digital circuit - Partial T1 LESS THAN 1.544 MBPS
|__| 2. DS1 OR T1 =1.544 MBPS (megabits per second)
|__| 3. DS2 OR T2 =6.312 MBPS
|__| 4. DS3 OR T3 =44.736 MBPS
|__| 5. OC1 OR STS-1 =51.84 MBPS
|__| 6. OC3 OR STS-3 =155.52 MBPS
|__| 7. Other (GO TO QUESTION 16)
|__| 8. DK
|__| 9. Refused

SKIP TO QUESTION 18
==========

16. Other leased service speed.

_____

SKIP TO QUESTION 18
==========

17. What is the speed of your wireless or satellite connection?

_____

18. How would you rate the speed of your companies Internet connection?

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. DK
|__| 6. Refused

IF (#18 < 3) GO TO #19

SKIP TO QUESTION 24
==========

19. Does your company plan to upgrade to a faster connection or a higher bandwidth in the next 12 months?

|__| 1. Yes (GO TO QUESTION 20)
|__| 2. No
|__| 3. DK
|__| 4. Refused

SKIP TO QUESTION 23
==========

20. What type of Internet service connection would best meet the needs of your company?

|__| 1. Digital subscriber line (DSL)
|__| 2. Cable modem
|__| 3. Wireless (cellular or PCS) provider or via satellite
|__| 4. Dial up modem through the telephone line
|__| 5. Leased line (dedicated digital circuit), or an
|__| 6. Other Telephone service (GO TO QUESTION 21)
|__| 7. No need at this time
|__| 8. DK
|__| 9. Refused

SKIP TO QUESTION 22
==========

21. Other telephone service that would best meet the needs of your company.

_____

22. What would be an affordable (Answer from question #20) monthly rate for your company to access the Internet?

|__| 1. Less than $100
|__| 2. $100 to $250
|__| 3. $250 to $400
|__| 4. $400 to $550
|__| 5. $550 to $700, or
|__| 6. Over $700
|__| 7. Not interested in Internet access
|__| 8. DK
|__| 9. Refused

23. What speed or bandwidth would best meet your company's needs-low, medium or high speed?

|__| 1. Low speed (dial up, low speed DSL)- less than 1 Mbps
|__| 2. Medium (DSL, partial T1)- 1 Mbps - less than 1.544Mbps
|__| 3. High speed (T1 or greater)-equal or greater than 1.544 Mbps
|__| 4. DK
|__| 5. Refused

24. Does your company have a choice of Internet service providers?

|__| 1. Yes (GO TO QUESTION 25)
|__| 2. No
|__| 3. DK
|__| 4. Refused

SKIP TO QUESTION 26

25. Generally, how many providers does your company have to choose from?

|__|__|

26. Are these services available in your area?

|__| 1. Digital subscriber line or DSL
|__| 2. Wireless Or Satellite Internet
|__| 3. Cable Modem Internet
|__| 4. DK
|__| 5. Refused

27. What is the name of the Internet provider used by your company?

|__| 1. America on-line (AOL)
|__| 2. Microsoft network
|__| 3. AT&T / Earthlink / Netcom / Compuserve
|__| 4. Prodigy / Sprint / MCI / Qwest
|__| 5. Local telephone company
|__| 6. Local newspaper
|__| 7. Local computer store/vendor
|__| 8. Long distance phone company
|__| 9. A cable TV system
|__| 10. A wireless company
|__| 11. Other Internet service provider (GO TO QUESTION 28)
|__| 12. DK
|__| 13. Refused

SKIP TO QUESTION 29
==========

28. Please type the name of the other internet service provider.

_____

29. How satisfied are you with your Internet provider?

|__| 1. Not At All Satisfied
|__| 2. Satisfied, or
|__| 3. Very Satisfied
|__| 4. DK
|__| 5. Refused

30. Is redundancy of transmission important to ensure that your company always maintains access to the Internet?

|__| 1. Yes (GO TO QUESTION 31)
|__| 2. No
|__| 3. DK
|__| 4. Refused

SKIP TO QUESTION 33
==========

31. How does your company secure redundancy?

|__| 1. Dual feed fiber
|__| 2. Multiple service providers
|__| 3. Self-healing ring
|__| 4. No redundancy provided now
|__| 5. Other (GO TO QUESTION 32)
|__| 6. DK
|__| 7. Refused

SKIP TO QUESTION 33
==========

32. Please type how the company secures redundancy.

_____

33. Does your company have a website on the Internet now?

|__| 1. Yes
|__| 2. No
|__| 3. Planned in the next 12 months
|__| 4. DK
|__| 5. Refused

34. How would you describe the availability of technology training resources, of any kind, to improve the skills of your staff?

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. DK
|__| 6. Refused

35. Does anyone at your company take advantage of any training programs that help your business better utilize the Internet?

|__| 1. Yes
|__| 2. No
|__| 3. DK
|__| 4. Refused

IF (#35 = 1) GO TO #36

SKIP TO QUESTION 37
==========

36. What types of training programs has your company used?

(CHECK ALL THAT APPLY)

|__| 1. Internet development seminars
|__| 2. Technology conferences
|__| 3. Local college or university classes
|__| 4. Independent personal computer training companies
|__| 5. Microsoft or Apple training
|__| 6. Various other seminars
|__| 7. Internet trade shows
|__| 8. Local training (chamber of commerce, other organizations)
|__| 9. Online training resources
|__| 10. Small Business Development Center (SBDC) training
|__| 11. None of these / Something else

37. How would you describe the availability of vendor support resources to help you implement Internet technology?

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. DK
|__| 6. Refused

SKIP TO QUESTION 43
==========

38. What do you think are the main barriers that have prevented your company from acquiring Internet access?

(CHECK ALL THAT APPLY)

|__| 1. Security concerns
|__| 2. Concerns about maintaining confidentiality
|__| 3. Lack of skilled personnel
|__| 4. Legal issues
|__| 5. Training and maintenance
|__| 6. Lack of customer demand
|__| 7. Effective marketing
|__| 8. Last mile (receiving technology and extended services)
|__| 9. Cooperation among service providers
|__| 10. Uncertainty and lack of information
|__| 11. Cost of services
|__| 12. Don't want or need the Internet (GO TO QUESTION 47)
|__| 13. Other (GO TO QUESTION 39)
|__| 14. N Refused

SKIP TO QUESTION 40
==========

39. Please type the other barrier which prevents their company from acquiring internet access.

_____

40. What type of Internet service connection would best meet the needs of your company?

|__| 1. Digital subscriber line (DSL)
|__| 2. Cable modem
|__| 3. Wireless (cellular or PCS) provider or via satellite
|__| 4. Dial up modem through the telephone line
|__| 5. Leased line (dedicated digital circuit), or an
|__| 6. Other Telephone service (GO TO QUESTION 41)
|__| 7. No Internet service connection need (GO TO QUESTION 47)
|__| 8. DK
|__| 9. Refused

SKIP TO QUESTION 42
==========

41. Please type the other telephone service that would best meet the needs of your company?

_____

42. What speed or bandwidth, low, medium or high speed access would best meet your company's needs?

|__| 1. Low speed (dial up, low speed DSL)- less than 1 MBPS
|__| 2. Medium (DSL, partial T1)- 1 Mbps - less than 1.544 MBPS
|__| 3. High speed (T1 or greater)-equal or greater than 1.544 MBPS
|__| 4. DK
|__| 5. Refused

SKIP TO QUESTION 46
==========

43. Has your company encountered any barriers using the Internet?

|__| 1. Yes
|__| 2. No
|__| 3. DK
|__| 4. Refused

IF (#43 = 1) GO TO #44

SKIP TO QUESTION 47
==========

44. Next, what would you say is the main barrier that your company has encountered using the Internet?

|__| 1. Security concerns
|__| 2. Concerns about maintaining confidentiality
|__| 3. Lack of skilled personnel
|__| 4. Legal issues
|__| 5. Training and maintenance
|__| 6. Lack of customer demand
|__| 7. Effective marketing
|__| 8. Last mile (receiving technology and extended services)
|__| 9. Cooperation among service providers
|__| 10. Uncertainty and lack of information
|__| 11. Cost of services
|__| 12. Other barrier mentioned (GO TO QUESTION 45)
|__| 13. Refused (GO TO QUESTION 46)

SKIP TO QUESTION 47

45. Please type the other barrier that the company has encountered using the internet.

_____

SKIP TO QUESTION 47

46. What would be an affordable monthly rate for your company to access the Internet?

|__| 1. Less than $100
|__| 2. $100 to $250
|__| 3. $250 to $400
|__| 4. $400 to $550
|__| 5. $550 to $700, or
|__| 6. Over $700
|__| 7. Not interested in Internet access
|__| 8. DK
|__| 9. Refused

47. Do you agree or disagree with the following? Doing business over the Internet will make my company more competitive.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

48. My company would rather spend more money to improve our current mode of business rather than to try and do business over the Internet.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

49. Doing business over the Internet gives my competitors access to too much information.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

50. Conducting business over the Internet will allow my company to expand its customer base.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

51. My company would consider doing business over the Internet only when most of our suppliers and customers use it.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

52. My company does not have the technical knowledge to do business over the Internet.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

53. Doing business over the Internet would involve high start-up costs.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

54. Doing financial transactions over the Internet does not provide enough security.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

55. It is important for companies to offer services and products online.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

56. I feel comfortable providing credit card information for online transactions.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

57. Maintaining privacy of personal information is a concern.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

58. Next, the following statements are about STATE governments role and the Internet. On a scale of 1 to 5, where 1 means Strongly Agree and 5 means Strongly Disagree, please tell me how strongly you agree or disagree with each one.
I believe online services should be a priority for state government.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

59. I think government agencies should share information with each other in order to identify wrongdoing or misrepresentations.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

60. I trust the state government to safeguard personal information.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

61. I would feel uncomfortable with state government maintaining a master profile containing all my public information to deliver better services.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

62. Private industry and government should partner to a greater extent on technology issues.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

63. Will these obstacles create a challenge for your company?

(CHECK ALL THAT APPLY)

|__| 1. Understanding how my industry is using the Internet
|__| 2. Understanding the opportunities available using the Internet
|__| 3. Understanding regional/national/global Internet markets
|__| 4. Restructuring your business around the Internet
|__| 5. Using the Internet to manage costs/expand revenues
|__| 6. Financing Internet ventures
|__| 7. Developing a business strategy for electronic commerce
|__| 8. Developing a business plan
|__| 9. Finding the technical expertise needed
|__| 10. Finding affordable Internet service in my location
|__| 11. Working with technology and Internet service providers
|__| 12. No challenges
|__| 13. Not Interested in the Internet
|__| 14. Refused

64. Speaking of resources for the following,
are programmers to develop applications...

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. Not Interested in Internet Access (GO TO QUESTION 70)
|__| 6. DK
|__| 7. Refused

65. Web development professionals?

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. DK
|__| 6. Refused

66. Network support personnel?

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. DK
|__| 6. Refused

67. Software technical support?

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. DK
|__| 6. Refused

68. Hardware technical support?

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. DK
|__| 6. Refused

69. Last mile connectivity options?

|__| 1. Not at all adequate
|__| 2. Somewhat adequate
|__| 3. Adequate, or
|__| 4. Very adequate
|__| 5. DK
|__| 6. Refused

70. How important would it be to your company that the State provides on-line government services?

|__| 1. Very important
|__| 2. Somewhat important, or
|__| 3. Not at all important
|__| 4. DK
|__| 5. Refused

IF (#4 > 1) GO TO #73

71. Has your company ever used the Internet to access government services?

|__| 1. Yes (GO TO QUESTION 72)
|__| 2. No
|__| 3. DK
|__| 4. Refused

SKIP TO QUESTION 73
==========

72. How satisfied was your company with on-line government services in general?

|__| 1. Very Satisfied
|__| 2. Somewhat
|__| 3. Neutral
|__| 4. Somewhat Dissatisfied
|__| 5. Very Dissatisfied
|__| 6. DK
|__| 7. Refused

73. How beneficial would EXPANDED state government Internet services be to your company?

|__| 1. Very beneficial
|__| 2. Somewhat beneficial, or
|__| 3. Not at all beneficial (GO TO QUESTION 74)
|__| 4. DK
|__| 5. Refused

SKIP TO QUESTION 76
==========

74. What are the main reasons you believe on-line state government services would not be beneficial to your company?

|__| 1. Privacy or Security Issues
|__| 2. Lack of Internet Knowledge
|__| 3. Lack of Computer Knowledge
|__| 4. Easier to Use Traditional Methods of Communication
|__| 5. Hard to find information
|__| 6. Difficult to ask a questions
|__| 7. No person-to-person contact
|__| 8. Other reason mentioned (GO TO QUESTION 75)
|__| 9. Refused

SKIP TO QUESTION 76
==========

75. OTHER REASON ON-LINE STATE GOVERNMENT WOULD NOT BE BENEFICIAL TO THEIR COMPANY.

_____

76. Would your company consider using the Internet to...

(CHECK ALL THAT APPLY)

|__| 1. File taxes
|__| 2. Pay traffic citations or court fees
|__| 3. Renew vehicle registrations
|__| 4. Obtain or renew professional licenses
|__| 5. Conduct business licenses or permit processing
|__| 6. Check employees driving records
|__| 7. Track or check license renewals of employees (DUP)
|__| 8. Conduct a registered business name search
|__| 9. Conduct new business registration
|__| 10. Respond to govt RFP's or procurement bids
|__| 11. File workers compensation forms
|__| 12. None of these - move to next question
|__| 13. Refused (GO TO QUESTION 78)

77. Would your company consider using the Internet to...

(CHECK ALL THAT APPLY)

|__| 1. File wage reports or unemployment insurance forms
|__| 2. Post employment listings
|__| 3. Research legal issues, regulations or laws
|__| 4. Track legislation
|__| 5. Access State government Records
|__| 6. Access on-line government services directories
|__| 7. Conduct criminal background checks
|__| 8. Access economic or trade data
|__| 9. Review on-line auctions or surplus property listings
|__| 10. Access training resources
|__| 11. Contact state legislators or gov't officials via e-mail
|__| 12. Access legal or court records
|__| 13. Access road conditions and emergency information
|__| 14. None of these
|__| 15. Refused

78. Do you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree with the following? I prefer to see someone in person if I need something from a government office.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

79. Having government information on the Internet would be more convenient and save time.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

80. Having Internet access would allow better access to government information.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

81. Finally, I am concerned about the quality of services the government would provide through the Internet.

|__| 1. Strongly Agree
|__| 2. Agree
|__| 3. Neither Agree nor Disagree
|__| 4. Disagree
|__| 5. Strongly Disagree
|__| 6. DK
|__| 7. Refused

82. How would you prefer state government fund the costs related to providing online government services? Would you prefer a...

|__| 1. Convenience fee,
|__| 2. Using general tax revenue,
|__| 3. Selling publicly available information to business, or
|__| 4. Selling advertising on the computer screen
|__| 5. None of these
|__| 6. DK
|__| 7. Refused

83. Do you have any general comments about providing government information or services through the Internet?

_____

84. Is this company a division of some larger organization or independent?

|__| 1. Division of a larger organization
|__| 2. Independent (GO TO QUESTION 85)

SKIP TO QUESTION 86
==========

85. Is the home office located in North Dakota?

|__| 1. Yes
|__| 2. No
|__| 3. Don't Know
|__| 4. Refused

86. What is the size of the community (or nearest community) where your company is located?

|__| 1. Less than 500
|__| 2. 500 to 3,000
|__| 3. 3,000 to 10,000
|__| 4. 10,000 to 20,000
|__| 5. 20,000 to 30,000, or
|__| 6. Over 30,000
|__| 7. DK
|__| 8. Refused

87. Where is this company located? Is it on...

|__| 1. In a retail office space or a manufacturing site,
|__| 2. Your home (non-farm) or
|__| 3. Your farm
|__| 4. Other location (GO TO QUESTION 88)
|__| 5. Refused

SKIP TO QUESTION 89
==========

88. Other company location.

_____

89. May I ask how many people does this company employ at this North Dakota location, including yourself?

|__|,|__|__|__|

90. Does your company have any employees who telecommute?

|__| 1. Yes (GO TO QUESTION 91)
|__| 2. No
|__| 3. DK
|__| 4. Refused

SKIP TO QUESTION 95
==========

91. How many of your employees telecommute?

|__|__|__|

92. Do you own, operate or manage this company?

|__| 1. Own (GO TO QUESTION 93)
|__| 2. Operate
|__| 3. Manage
|__| 4. None of these
|__| 5. Refused

SKIP TO QUESTION 94
==========

93. How many years have you owned the company?

|__|__|__|

94. Broadly speaking, what is the age of the owner or president of this company?

|__| 1. 18 to 24 Years of Age
|__| 2. 25 to 44
|__| 3. 45 to 54
|__| 4. 55 to 64, or
|__| 5. Over 65
|__| 6. DK
|__| 7. Refused

95. May I ask what was your company's gross annual sales for 2001.

|__| 1. Less than $25,000
|__| 2. $25,000 < $50,000
|__| 3. $50,000 < $100,000
|__| 4. $100,000 < $200,000
|__| 5. $200,000 < $300,000
|__| 6. $300,000 < $400,000
|__| 7. $400,000 < $500,000
|__| 8. $500,000 < $1 Million
|__| 9. $1 Million < $2.5 Million
|__| 10. $2.5 Million +
|__| 11. DK
|__| 12. Refused

96. That is all the questions I have...thank you for your participation.

|__| 1. Male
|__| 2. Female

Appendix B: Industry Groups. Response Rates and Sample Demographics

Industry Groups

Companies responding to the survey were combined into industry groups by standard industrial codes (SIC). The frequency in each table represents the number of completed company interviews. The four industry groups are presented in Tables 21 through 24.

Table 21. Manufacturing, Agriculture, Mining, Construction and Transportation

Industries Included:	Frequency	%
Coal Mining	1	0.7
Oil and Gas Extraction	8	5.4
Nonmetallic Minerals, Except Fuels	1	0.7
General Building Contractors	16	10.8
Heavy Construction, Ex. Building	6	4.1
Food and Kindred Products	16	10.8
Furniture and Fixtures	3	2.0
Paper and Allied Products	1	0.7
Printing and Publishing	8	5.4
Rubber and Misc. Plastics Products	1	0.7
Stone, Clay, and Glass Products	2	1.4
Fabricated Metal Products	10	6.8
Industrial Machinery and Equipment	13	8.8
Transportation Equipment	1	0.7
Instruments and Related Products	2	1.4
Miscellaneous Manufacturing Industries	3	2.0
Local and Interurban Passenger Transit	3	2.0
Trucking and Warehousing	30	20.3
Water Transportation	1	0.7
Transportation by Air	1	0.7
Pipelines, Except Natural Gas	2	1.4
Transportation Services	2	1.4
Communication	7	4.7
Electric, Gas, and Sanitary Services	7	4.7
Agriculture	3	2.0
Total	**148**	**100%**

Table 22. Retail and Wholesale Trade

Industries Included:	Frequency	%
Special Trade Contractors	29	9.8
Retail Trade	2	0.7
Wholesale Trade-Durable Goods	53	18
Wholesale Trade-Nondurable Goods	27	9.2
Building Materials & Garden Supplies	17	5.8
General Merchandise Stores	3	1.0
Food Stores	24	8.1
Automotive Dealers & Service Stations	37	12.5
Apparel and Accessory Stores	7	2.4
Furniture and Home Furnishings Stores	13	4.4
Eating and Drinking Places	44	14.9
Miscellaneous Retail	39	13.2
Total	**295**	**100%**

Table 23. Services

Industries Included:	Frequency	%
Hotels and Other Lodging Places	19	6.3
Personal Services	35	11.7
Business Services	35	11.7
Auto Repair, Services, and Parking	28	8.3
Miscellaneous Repair Services	8	2.7
Motion Pictures	5	1.7
Amusement & Recreation Services	13	4.3
Health Services	67	22.3
Legal Services	12	4.0
Social Services	42	14.0
Museums, Botanical, Zoological Gardens	1	0.3
Membership Organizations	12	4.0
Engineering & Management Services	25	8.3
Services, NEC	1	0.3
Total	**300**	**100%**

Table 24. Finance and Public Administration

Industries Included:	Frequency	%
Depository Institutions	19	15.6
Nondepository Institutions	3	2.5
Security and Commodity Brokers	13	10.7
Insurance Carriers	2	1.6
Insurance Agents, Brokers, & Service	41	33.6
Real Estate	26	21.3
Nonclassifiable Establishments Division	18	14.8
Total	**122**	**100%**

Sample Design and Response Rates

Sample Design. Information about how survey samples are developed is important in assessing the validity and reliability of the results of the survey. Genesys Sampling Systems and *Info*USA supplied the list of North Dakota business. The target business survey populations were defined as all private sector businesses[2] with 100 or more employees and a random sample of businesses with 99 employees or less. Table 1 presents the sample design, the number of businesses by employee firm size and the number of completed interviews by the target business survey populations.

Overall, 1,609 companies were called and asked to be a study participate. Throughout the project, interviewers tried to contact the person who was most familiar with the computer systems and Internet technologies at their company. Staff classified 1,507 of these contacts as eligible for interview and successfully interviewed 875 of these companies. Interviewers encountered businesses that would not release information about their company's Internet or computer technologies because policy did not permit employees to do so. Table 25 presents the total sample businesses dispositions.

Table 25. Total Sample Dispositions

Sample Disposition	Num	Percent
Completed Interviews	875	50.8
Nonworking Number	123	7.6
Duplicate Contacts	36	2.2
Policy not to Release	38	2.4
Language Barrier	1	.1
Refusals	335	20.8
Terminated Interview	57	3.5
Contacted Not Interviewed	201	12.5
Totals	1,609	100.0

All interviews were conducted at SSRI facilities by trained interviewers with supervision and random monitoring for technique and adherence to established procedures. Interviews were conducted generally on weekdays from 8 a.m. and 5:30 p.m. Efforts to complete interviews with selected companies were extensive. The number of callbacks to complete an interview with an eligible company ranged from 1 to 18.

Response Rates. Survey professionals in general have found that response rates for telephone surveys have declined in recent years. The consequence has been that response rates for telephone surveys are now calculated in several different ways although all of these approaches involve dividing the number of respondents by the number of contacts believed to be eligible. Differences in response rates result from different ways of calculating the denominator, i.e. the number of individuals eligible to respond. The most liberal approach is called the Upper Bound method and takes into account only those individuals who refuse to participate or who terminate an interview. This approach is used by the federal government because of controversies about the eligibility of numbers that could not be reached.

The most conservative approach is the method adopted by the Council of American Survey Research Organizations (CASRO). The CASRO method uses the known status of portions of the sample that are contacted to impute characteristics of portions of the sample that were not reached. Over-quota eligibles are assumed to qualify as *good numbers*.

Random Sample of Business with 99 Employees or Less. Overall, 1,337 companies with 99 employees or less were randomly called and asked to be a study participate. Staff classified 1,079 of these contacts as eligible for interview and successfully interviewed 702 of these companies. Table 25 presents the random sample businesses dispositions.

Table 26. Random Sample Dispositions

Sample Disposition	Num	Percent
Completed Interviews	702	52.5
Nonworking Number	99	7.4
Duplicate Contacts	44	3.3
Policy not to Release	15	1.1
Language Barrier	1	.1
Refusals	269	20.1
Terminated Interview	46	3.4
Contacted Not Interviewed	161	12.0
Totals	1,337	100.0

The Upper Bound method of calculating the response rate for the random survey yields a response rate of 69%. The CASRO method of calculating the response rates for the random survey yields a response rate of 59.6% if over-quota eligibles are assumed to qualify as "good numbers."

Census of Business with 100 or More Employees. The original *Info*USA count for the number of businesses with over 100 employees was 356. The actual number was 330 due to businesses with multiple locations or company branches in North Dakota and those having duplicate contact names. The business census survey response rate was 56.7%. Table 26 presents the businesses census dispositions.

Table 27. Census Sample Dispositions

Sample Disposition	Num	Percent
Completed Interviews	173	52.4
Nonworking Number	10	3.0
Duplicate Contacts	7	2.1
Policy not to Release	8	2.4
Language Barrier	0	0.0
Refusals	69	20.9
Terminated Interview	18	5.5
Contacted Not Interviewed	45	13.6
Totals	330	100.0

Demographics of the Sample

The following section adds additional detail about the demographic characteristics of the sample.

Company Structure. Over half of the companies reported they were independent and not a division of a larger organization (Table 28).

Table 28. Company Structure

% within TARGET

		TARGET		
		Census	Random	Total
OFFICE Division of larger organization or independent	Division larger	49.7%	22.2%	27.7%
	Independent	50.3%	77.8%	72.3%
Total		100.0%	100.0%	100.0%

Home Office Location. Almost all independent companies indicated their home office was located in North Dakota (Table 29).

Table 29. Home Office Location

% within TARGET

		TARGET		
		Census	Random	Total
OFFICE2 Home office in ND	Yes	92.9%	95.5%	95.1%
	No	7.1%	4.5%	4.9%
Total		100.0%	100.0%	100.0%

Community Location. Table 30 presents the size of the community or nearest community or company respondents by sample area.

TAble 30. Size of Community or Nearest Community

% within TARGET

		TARGET		
		Census	Random	Total
SIZE Size of commnuity	Less than 500	2.9%	12.3%	10.4%
	500 to 3,000	14.5%	20.8%	19.5%
	3,000 to 10,000	8.1%	7.7%	7.8%
	10,000 to 20,000	12.7%	12.3%	12.3%
	20,000 to 30,000,	2.9%	3.1%	3.1%
	Over 30,000	59.0%	43.9%	46.9%
Total		100.0%	100.0%	100.0%

Telecommuting Employees. Companies with 100 employees or larger are more likely to have employees who telecommute. These companies average eight employee telecommuters. The average number of employees Table 31 shows the number of companies with employees that telecommute by sample area.

Table 31. Companies with Telecommuters

% within TARGET

		TARGET		
		Census	Random	Total
TEL Telecommuters	Yes	32.5%	10.2%	14.8%
	No	67.5%	89.8%	85.2%
Total		100.0%	100.0%	100.0%

Company Ownership. The average age of the owner or company president is between 45 to 54. Table 32 presents the age of the owner or company president by sample area.

Table 32. Age of Owner or Company President

% within TARGET

		TARGET		
		Census	Random	Total
AGE Age of owner or president	18 to 24	2.2%	5.4%	4.0%
	25 to 44	13.3%	32.1%	23.8%
	45 to 54	48.9%	35.7%	41.6%
	55 to 64	15.6%	19.6%	17.8%
	Over 65	13.3%	1.8%	6.9%
	DK	6.7%	5.4%	5.9%
Total		100.0%	100.0%	100.0%

2001 Gross Annual Sales. Table 33 presents respondents 2001 gross annual sales by sample area.

Table 33. Self Reported 2001 Gross Sales

% within TARGET

		TARGET		
		Census	Random	Total
GROSS Gross annual sales for 2001	Less than $25,000	2.1%	5.8%	4.9%
	$25,000 < $50,000		5.1%	3.9%
	$50,000 < $100,000		7.5%	5.8%
	$100,000 < $200,000		8.9%	6.8%
	$200,000 < $300,000		5.8%	4.4%
	$300,000 < $400,000		3.1%	2.4%
	$400,000 < $500,000		2.0%	1.5%
	$500,000 < $1 Mill	.7%	7.3%	5.8%
	$1 Million < $2.5	3.6%	5.5%	5.1%
	$2.5 Million +	57.1%	15.3%	25.2%
	DK	36.4%	33.7%	34.3%
Total		100.0%	100.0%	100.0%

Table 33 presents InfoUSA reported 2001 gross annual sales by sample area.

Table 34. InfoUSA Reported 2001 Gross Annual Sales

% within TARGET

		TARGET		
		Census	Random	Total
SALES SALES VOLUME CODE	<$500,000	3.5%	42.9%	35.1%
	$500,000 < $1 MILLION	1.7%	16.1%	13.3%
	$1 MILLION < $2.5 MILLION	1.7%	16.0%	13.1%
	$2.5 MILLION < $5 MILLION	10.4%	5.8%	6.7%
	$5 MILLION < $10 MILLION	12.7%	5.7%	7.1%
	$10 MILLION < $20 MILLION	17.3%	4.4%	7.0%
	$20 MILLION < $50 MILLION	20.2%	1.7%	5.4%
	$50 MILLION < $100 MILLION	11.6%	.9%	3.0%
	$100 MILLION < $500 MILLION	6.4%	.1%	1.4%
		14.5%	6.4%	8.0%
Total		100.0%	100.0%	100.0%