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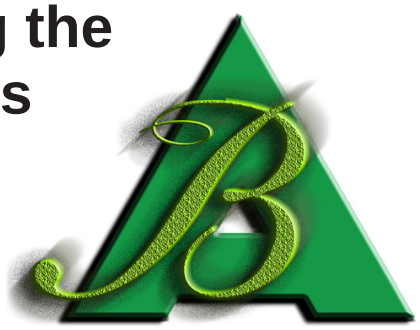
Broadband Internet: Removing the Speed Limit for Canadian Firms



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Summary

The rising availability and adoption of broadband Internet has produced many opportunities for businesses in Canada, particularly small firms. The most obvious advantage—the ability to access the Internet at much higher speeds—enables firms to use advanced information and communications technologies (ICTs) more effectively.

The use of high-speed Internet is a key complement for a firm trying to effectively use other advanced technologies, such as websites, Intranets and Extranets, and to sell online. This is true across all sizes of enterprises.

In 2003, 63% of small Internet-using enterprises, and 66% of firms overall, employed broadband technology. These high-speed enterprises were more likely to have had a website and an Intranet than firms that still used low-speed Internet, and they were more likely to have conducted transactions online.

Small firms that used high-speed Internet also were more comparable to large firms in Canada in their use of advanced information and communication technologies. This suggests that if firms choose not to utilize high-speed Internet, they may also be forgoing other technological advantages that may be available to them.

If small businesses have broadband, these firms now have an enhanced ability to apply other advanced information and communication technologies that may be advantageous to them. Data show that firms that have adopted high-speed Internet are using advanced ICTs in greater proportion than those that still use low-speed.

This study examines the use of broadband Internet by Canadian firms and the influence this may have on their use of other advanced information and communication technologies. In particular, it focuses on the ability of broadband Internet to enable small firms to be on a more level technological footing with larger firms.

Note to readers

This study uses the terms 'firm' and 'enterprise' interchangeably. Enterprise size is based on the number of full-time employees. It should be noted that enterprise size—small, medium or large—is industry-specific. What may be considered a large enterprise in some industries may be small in others. The following two size groupings are used:

	Small	Medium	Large
Manufacturing Sector	0-19	20-499	500+
All Other Sectors	0-19	20-99	100+

Source: S. Charles, M. Ivis and A. Leduc, 2002, "Embracing e-Business: Does Size Matter?" *Connectedness Series*, Catalogue No. 56F0004MIE, No. 6, Ottawa, Statistics Canada.

The Survey of Electronic Commerce and Technology (SECT) identifies four ways that businesses may connect to the Internet, three of which are classified as high-speed. Cable connections, high-speed telephone (ISDN/DSL) connections and dedicated communication lines (T1/T3) are all identified as high-speed connections, while dial-up modems are considered a low-speed connection. For the purposes of this study, only the highest-speed connection of each firm is considered.

Broadband for business: An increasing presence

Broadband Internet has caught on quickly in Canada, increasing each year that data has been collected by the Survey of Electronic Commerce and Technology (SECT). In 2001, 48% of firms had high-speed Internet; by 2003, this had increased to 66%. Overall, Canada has been among the worldwide leaders in broadband penetration and growth, according to the Organization for Economic Co-operation and Development (OECD).

Small firms have made inroads over the past three years as broadband has become more affordable and accessible. However, broadband is still much more common among large firms, 94% of which used high-speed Internet in 2003. Only 63% of small firms used high-speed. Not coincidentally, large firms also used advanced ICTs at higher rates than did small firms.

While broadband Internet may not be useful for all small firms, those which choose to implement it become technologically equivalent in this regard with large firms that likely already have broadband. The reason is the superior speed at which data and information can be shared over broadband. Competition among providers in the Canadian broadband market has made the technology affordable for almost every firm, although in some areas it is still not available.

The most popular method of accessing high-speed in 2003 was through a high-speed telephone line. Of firms that had broadband access, 62% used a high-speed phone line, or digital subscriber line (DSL). Between 2000 and 2003, this was the fastest-growing method of broadband access. The increased use of DSL among businesses may be a result of declining prices, increased marketing by providers and the presumably universal availability of telephone lines in commercial developments. Conversely, cable lines have traditionally been run through residential neighbourhoods and frequently not in industrial or commercial developments.

Broadband use among large firms is prevalent across various industries. Aided by improved accessibility and affordability, more firms than ever are using broadband. In 2003, large firms in almost all 19 private industrial sectors had a rate of broadband use greater than 85%.

Percentage of private firms using broadband (2001-2003)

	Small firms		Medium firms		Large firms	
	Speed of Internet connection					
	Low	High	Low	High	Low	High
2001	49.3	45.9	38.1	57.1	10.9	83.5
2002	39.1	55.7	26.0	70.9	10.5	83.6
2003	30.1	63.6	15.6	78.7	2.7	94.4

Source: Survey of Electronic Commerce and Technology.

Broadband use by small firms, while still prevalent, appears to be concentrated in fewer sectors. Only four of the 19 sectors had a penetration rate of over 70%. These sectors are also among the leaders in the use of advanced ICTs, such as websites, Intranets and Extranets.

However, some sectors may never recognize the advantages of embracing high-speed, while there are other sectors for which advanced ICTs are not as relevant to their business. In addition, sectors such as agriculture and forestry may still be limited by the lack of access to broadband in some regions.

Overall, the top three industrial sectors for broadband use are information and culture, utilities, and finance and insurance. All three are also leaders in their use of websites, purchasing and selling online. It is evident that some industrial sectors do recognize the advantages of broadband Internet, and have used it to broaden their use of other ICTs.

Web presence: High-speed firms leap ahead

One of the most important advantages broadband can offer firms is the opportunity to host their own website. A website is an important element of a firm's e-commerce strategy since it can provide information about a company to the public, serve as a way to collect information and provide a gateway to selling online. This is an important advantage for small firms in particular, since it can expose their company and product to a much larger audience.

Overall, in 2003, 77% of large firms had their own website, compared with only 29% of small firms. However, firms with broadband access are much more likely to have a website than those without, and this applies to firms of all sizes.

Data show that small firms with high-speed access are closing the technology gap with large firms, more so than their low-speed counterparts. For example, in 2003, 44% of small firms with high-speed access had a website, compared with only 27% of those with low-speed.

Among large firms, 80% with high-speed access had a website, nearly twice the proportion of 43% with low-speed access.

To host a website, a firm must always be connected to the Internet, a feature which broadband makes available. However, there are options for low-speed firms that do not have the capability to host their own website. They may choose to have their website hosted by their Internet service

provider (ISP) or a web-hosting company. Some small firms may choose these alternatives as a cost-saving measure.

While an ISP may offer a small amount of free web space, it has some drawbacks. For example, some ISPs may want to place their own advertising on the site and offer limited features on a site. E-commerce capabilities are not always available when a website is hosted by an ISP. This severely limits a low-speed firm's ability to sell online and offer certain interactive features. By hosting their own website, firms are able to update it easily from their own location and manage its features more readily.

In addition, firms that have high-speed Internet are more likely to have advanced features incorporated into their website. These features include such technology as online payment, interactivity, digital features, a privacy policy and security provisions. Firms that have high-speed Internet are more likely to have all these website characteristics, which allow a firm to offer more than just advertising on their website.

Interactive features and digital products may allow customers, for example, to customize a new car for order, view video or listen to audio through a website. Firms can offer investors online financial reports, allow customers to view a company's recent news releases, or provide interactive tools, such as mortgage calculators. In fact, with today's technology, website features may be limited only by a firm's imagination.

The most crucial website feature of high-speed Internet is that it allows firms to offer a secure portal. In 2003, only 16% of low-speed firms with a website had a secure portal, compared with 28% of high-speed firms. Even 26% of small firms with high-speed had a secure portal. Although this was still a lower proportion than among their larger counterparts, these small, high-speed firms have closed the gap much faster than those that still use low-speed.

Some firms consider a secure portal essential because it allows them to collect information in an encrypted format, enhancing customers' confidence that their information will remain private. This is the first step towards such e-business activities as selling online. In addition, secure portals allow firms to collect other valuable demographic and personal information from clients that would not be appropriate to share over an open network.

Intranets and Extranets: Used primarily by high-speed firms

Intranets and Extranets can encourage better communication and collaboration, both within an organization and with outside suppliers and customers. With broadband, the advantages that Intranets and Extranets can provide have become available to firms of all sizes. Firms that use broadband are most likely to employ these technologies.

As Canadian firms began to adopt ICTs, computer networks were seen by some as a feature that could only be employed effectively among large businesses. However, small firms in Canada are increasingly under pressure from large suppliers and clients to accept new technologies and methods of doing business with one another. Without the required infrastructure and technology in place, a firm could lose a key customer or see another firm chosen as a supplier.

Intranets may vary in their complexity and size, depending on the demands they are designed to meet. Intranet technology has the potential to link three or four people, or even thousands of employees, depending on a firm's requirements. The network can provide all sorts of information and interactivity to those connected to it, including newsgroups, video and e-mail.

Intranets have become much easier and much less expensive to set up than traditional networks, since they are based on Internet technology that makes the Intranet accessible through traditional web browsers. These network systems are now accessible to small firms that may not have had the expertise or financial capital to install them before.

In 2003, 16% of all Canadian firms employed an Intranet. This proportion jumped to 27% for those with broadband. The reason is that an Intranet is more effective if employees are always connected to it, instead of having to log on each time. Of small firms that used broadband, 21% had an Intranet, four times the proportion of only 5% among low-speed small firms. Broadband is the enabling element.

Extranets are less common, but the scenario is similar. An Extranet can provide customers and suppliers with secure access to a firm's information systems, thereby improving communication and efficiency. Extranets were used by less than 2% of low-speed firms in 2003; but more than 10% of high-speed firms used them.

In addition, while less than 2% of low-speed small firms used an Extranet, more than four times this many small high-speed firms used one. Again, high-speed Internet is an enabler for firms to adopt other technologies, and is particularly important for small firms.

Purchasing online: High-speed Internet eases access

Any firm with a computer, a credit card and Internet access can make purchases over the Internet. That's why the proportion of firms that purchase over the Internet is rising—from only 22% in 2001 to 37% in 2003. Purchasing over the Internet may enable firms to communicate with one another more effectively, provide a more varied choice of products and allow more efficient price comparisons.

The most telling indicator of whether a firm will purchase goods or services online is the presence of high-speed Internet. This is certainly not a prerequisite for firms that want to make purchases online. But it does enhance their ability to do so by allowing them to compare many suppliers and products very quickly. Such 'window shopping' increases the likelihood that they will participate.

Overall, 56% of firms that had high-speed Internet made purchases over the Internet in 2003, compared with 35% of low-speed firms. The fact that a relatively high proportion of low-speed firms still purchase over the Internet is a testament to the ease of doing so. However, a gap still exists, suggesting that these low-speed firms are not keeping up with their high-speed counterparts that have fully embraced the technology and engaged in purchasing online.

The gap between the proportion of large firms and small firms that participate in online purchasing is much smaller than for other technologies. While the proportion of large high-speed firms that purchase over the Internet is slightly higher than small high-speed firms, size does not seem to be as critical a factor.

In 2003, 55% of small firms that had high-speed Internet made purchases online. The proportion for large high-speed firms was 64%, only nine percentage points higher. There has been a shift from previous years when larger firms were far more likely to purchase online than their smaller competitors, likely as a result of many more small firms than ever using high-speed Internet.

Online sales: Dominated by high-speed firms

In 2003, firms that used high-speed Internet accounted for 97% of the value of online sales in Canada. In addition, the proportion of high-speed firms that sold online was more than double that of low-speed firms that sold online, and 50% higher than the overall proportion of firms that sold online. Clearly, high-speed users dominate e-commerce, both in terms of the value of goods and services sold and the proportion that sell online.

The adoption of e-mail, websites and internal and external networks are all important steps in a firm's technological progression. All these technologies can serve to help a firm become larger, more well-known and more efficient. However, for many firms that are trying to establish a profitable presence on the Internet, these technologies are merely prerequisites that must exist before they can sell online.

Establishing online sales is the goal of many firms, both large and small, as they seek to expand their customer and client base by providing an Internet presence. Firms using high-speed Internet are much more likely to obtain the tools that are necessary to establish a portal for selling goods and services online.

The infrastructure needed to support online sales essentially restricts firms to using a broadband connection. Features such as secure Internet sites, high download and upload rates and constant connection to the Internet are important components of an e-commerce enterprise.

More than 70% of sales by high-speed firms are made from one business to another, with an average sale likely having a far greater value than those sales to individual consumers. Low-speed business users, which are for the most part comprised of small firms, have concentrated on making sales to individual consumers instead of making sales to other businesses.

In 2003, almost 60% of sales by low-speed firms were to households. Of the low-speed firms that sell online, the majority tended to be small firms. In fact, in 2003, small firms accounted for 83% of sales by low-speed firms, although this represents just over 2% of all sales in Canada. These small firms may not have adopted high-speed because they do not feel the cash investment is justified, or the technology may not yet be available in their locale.

Those small firms that have chosen and are able to implement high-speed Internet show a greater propensity to engage in e-commerce. By selling online, small firms can maximize their client base and increase their exposure to potential customers. Just over 10% of small firms that have high-speed Internet also sell over the Internet, a higher percentage than the overall percentage of firms that sell online.

In 2003, small high-speed firms accounted for about 13% of online sales in Canada. This suggests that small firms that are able to adopt high-speed Internet, and the features necessary to sell online, can pull themselves closer to larger firms in the online economy.

Percentage of firms using selected ICTs in 2003

	Speed of Internet connection	
	Low	High
Small Firms		
Website	27.1	44.4
Intranet	5.4	21.4
Extranet	1.6	7.3
Purchasing online	35.0	54.7
Selling online	4.0	10.3
Medium Firms		
Website	54.3	74.6
Intranet	23.1	46.7
Extranet	5.3	20.3
Purchasing online	35.3	58.8
Selling online	12.1	15.8
Large Firms		
Website	42.7	80.1
Intranet	38.0	62.4
Extranet	3.6	34.8
Purchasing online	35.2	64.2
Selling online	n/a	15.8
Overall		
Website	29.2	50.4
Intranet	6.8	26.7
Extranet	1.9	10.3
Purchasing online	35.0	55.7
Selling online	4.6	11.4

Source: Survey of Electronic Commerce and Technology.