

Net Impact Study Canada

The International Experience

Interim Report

May 2003



Canadian e-Business Initiative

Productivity, Leadership and Innovation for Canadian Business

Net Impact Study Canada: The International Experience

Despite the recent economic downturn, particularly in the Information and Communications Technology (ICT) sector, the transformation of traditional business processes using Internet Business Solutions (IBS) continues. Businesses and governments around the world are leveraging the Internet to improve performance.

Net Impact Canada: The SME Experience,¹ published in November 2002, reported on how Canadian small and medium-sized enterprises (SMEs) were using IBS to improve their business processes. Just over half (50.2%) of Canadian SMEs were using or implementing IBS and a further 20.3% intended to adopt IBS over the next three years. The study also suggested that in a “best case” scenario, an average firm could increase net profits by more than 150% with the changes in revenues and costs brought about by their adoption of IBS.

However, that same study also found that more than a quarter of Canadian SMEs (28.4%) had no intention of adopting IBS. Those SMEs who choose not to adopt IBS will not benefit from the potential productivity improvements offered by IBS. As a result these firms are also running the risk of getting shut out of global supply chains which are increasingly being integrated using IBS technology. This group of non-adopters has been the central focus of the Canadian e-Business Initiative (CeBI), a group of Canadian business leaders and academics who are led by the private sector, and are partnering with government, to further the development of the digital economy in Canada. CeBI believes that in order for Canada’s economy to remain competitive, SMEs must accelerate their adoption of IBS.

Net Impact Canada: The International Experience extends the findings of *The SME Experience* and explores how Canadian SMEs compare with similar firms abroad. In particular, Canada is compared to the United States (U.S.) and three leading European Union (EU) countries as a group: the United Kingdom, France and Germany.

Methodology

The data in this report comes from three separate studies. The first Net Impact Study was conducted in the U.S. in late 2001.² It was designed to measure, among other things, the current and anticipated cost savings and revenue increases that organizations believe have been created by their investment in Internet business solutions. For purposes of the Net Impact studies, Internet business solutions are defined as initiatives that combine the Internet with networking, software and computing hardware technologies to enhance or improve existing business processes or to create new business opportunities. These Internet business solutions are categorized as:

- Customer Development and e-Marketing
- Customer Service and Support
- E-Commerce
- Finance and Accounting
- Human Resources
- Procurement and Maintenance, Repair and Operation (MRO)
- Sales Force Automation
- Supply Chain Management

¹ McClean, R.J., D.A. Johnston, M. Wade, *Net Impact Study Canada: The SME Experience*, November 2002, www.cebi.ca.

² Varian, H., R.E. Litan, A. Elder, J. Shutter. *The Net Impact Study: The Projected Economic Benefits of the Internet in the United States, United Kingdom, France and Germany*. V2.0, January 2002. www.netimpactstudy.com.

The second study was a modification of the U.S. study conducted in three EU nations – the U.K., France and Germany – in late 2001. The third, Canadian study was conducted in the Summer of 2002, and was based on the U.S. and EU studies. The three studies were similar but not identical. The largest difference between the Canadian study and the others was that it focused exclusively on the SME population, while the U.S. and EU studies looked at firms of all sizes.

The Canadian study concentrated on firms having between 50 and 500 full-time employees. A stratified random sample was taken from five broad industry sectors:

- Manufacturing
- Financial Services
- Retail, Wholesale and Distribution
- Communications and Internet Service Provider (ISP)
- Public Service

A total of 1968 Canadian firms were contacted by telephone during the summer of 2002. After filtering for firm size and industry sector, 398 firms were randomly selected to participate in the interview.

For this report, the datasets from the U.S. and European studies were reduced to firms between 50 and 500 employees and taken from the five industry categories identified above. The final dataset consisted of 1666 organizations – 398 from Canada, 1011 from the U.S. and 257 from the E.U.

Most of the data in this report is presented in the form of relative differences between regions rather than absolute differences. This approach is taken to allow for easy comparisons among regions despite large differences in relative economic size. In most of the analysis, statistical tests were utilized to determine results with at least a 95% level of confidence (hence the phrase *significant difference*). In some instances, small sample sizes meant that tests of statistic significance could not be conducted.

Due to small individual sample sizes, data from the U.K., France and Germany were aggregated into one EU category. While this approach may overlook important differences between these three countries, it was necessary in order to have sufficient data to make statistically meaningful comparisons.

Data weights were used to match the sample to the relevant population in terms of organization size and industry.

Strengths, Weaknesses, Opportunities and Threats for Canadian SMEs: A Call to Action

This report describes the comparative performance of Canadian small and medium-sized enterprises (SMEs) in terms of adoption and use of Internet Business Solutions (IBS). The results are not clear cut. Canadian SMEs are doing well relative to international counterparts in some areas and less well in others. Within Canada, some industry sectors are outperforming others by wide margins.

This section provides a summary of the report's results in the form of a SWOT analysis (strengths, weaknesses, opportunities and threats). Each section of the SWOT analysis is accompanied by a *call to action* which outlines how Canadian businesses and policy makers can respond to the report's findings in order to improve the performance of Canadian SMEs.

Perhaps the first and most important *call to action* is to continue to explore how Canadian SMEs are using and benefiting from IBS. As IBS usage becomes more complex, it becomes necessary to conduct more in depth research in order to understand nascent trends and develop a tool kit of best practices. In addition to surveys and questionnaires, it will become necessary to conduct interviews, organize workshops and develop case studies.

Strengths

- Internet Infrastructure: Canada is among the world's best in terms of Internet infrastructure, particularly broadband connectivity.
- Public sector support for eBusiness: Canada topped major trading partners in Government Net readiness and Net usage.
- Adoption of IBS by Canadian SMEs: while Canadian SMEs still lag behind larger firms in terms of current IBS adoption, they outpaced similar firms from the U.S. and EU.
- Canadian SME Public sector use of IBS: Canadian public SMEs outpaced their U.S. and EU counterparts on a number of financial and non-financial dimensions.
- More Canadian SMEs note financial benefits: proportionally more Canadian SMEs claimed financial benefits (increases in revenues and decreases in costs of good sold and sales, general and administrative expenses) as a consequence of IBS adoption than either U.S. or EU SMEs.
- Use of IBS for cost cutting by Canadian SMEs: Canadian SMEs realized a significantly greater average cost saving than U.S. or EU firms, particularly in reducing costs of goods sold (COGS), that led to some superior results for the average firm.
- Smaller Canadian firms (50-100 employees) tended to outperform medium-sized firms (101-500 employees) in the adoption of certain IBS.

Call to action: *The Canadian government should continue to lead the way in promoting and using Internet Business Solutions. Those Canadian SMEs that have adopted IBS have realized substantial benefits in line with, or better than, comparable firms worldwide. This message needs to be sent to non-adopting firms accompanied by realistic and detailed examples of practice in implementation. Efforts should be taken to promote the continued adoption and use of IBS by Canadian SMEs.*

Weaknesses

- Canadian eBusiness is lagging globally: evidence from a series of international sources suggests that Canadian businesses are falling behind key trading partners in Net commerce, usage and readiness, despite superior individual and Government rankings.
- 28.4% of Canadian SMEs had no intention of adopting IBS (comparable data from other regions was not available): cost of new infrastructure appeared to be the main reason for non-adoption, followed by the time required to implement IBS projects, and an uncertain return on investment.
- Canadian SMEs led in customer-focused IBS, but lagged the U.S. in internally-focused IBS: short term benefits may be realized as a result of customer-focused IBS such as customer service solutions and e-marketing, but longer term gains may require the adoption of internally-focused solutions such as supply chain management solutions and sales force automation.
- U.S. and EU SMEs realized greater revenue increases attributable to IBS adoption than Canadian SMEs: even though more Canadian SMEs showed increased revenue, the average percentage gain was lower than for the two other regions.
- Canadian SMEs from the manufacturing sector and retail, wholesale/distribution sector lagged the U.S. and EU in revenue impacts: although they were comparable on costs reduction from IBS adoption, Canadian SMEs from these two important sectors lagged the U.S. and EU on the average gain in revenue by a significant margin.
- Smaller Canadian firms (50-100 employees) tended to underperform their medium-sized Canadian counterparts in realized financial benefits. This was particularly the case in reducing *cost of goods sold*, even though they led U.S. and European firms.

Call to action: *Despite evidence of tangible benefits, large numbers of SMEs are refusing to adopt Internet Business Solutions. The reasons might be found in the details of industry practice and structure and the capabilities of the technology to address the needs of SMEs. If they can be convinced of the benefits of IBS adoption, including bottom line improvements leading to a fast return on investment, then adoption rates should increase. In particular, efforts should be concentrated on the retail and wholesale/distribution sector and the manufacturing sector, each of which lag other sectors in both IBS adoption and financial gains.*

Opportunities

- Canadian adoption of IBS was in line with the U.S. and EU: despite evidence that Canadian SMEs were missing out on substantial IBS-related benefits, U.S. and EU SMEs had similar adoption rates. Canadian SMEs are not falling behind their international counterparts on current IBS adoption rates.
- Financial benefits were similar across regions: financial benefits associated with IBS adoption were similar among Canada, the U.S. and the EU.
- Canada had superior Internet infrastructure and public policy support for eBusiness. The financial services sector is a world leader in the use of IBS.
- Most of the benefits from IBS adoption came from newly acquired customers: in order to maintain increases in revenues, Canadian SMEs must find new customers, perhaps from abroad.

Call to action: *Canada has the foundations in place for strong eBusiness performance – widespread infrastructure and strong Government support. Any gaps with international competitors are surmountable. Canada has the opportunity to use these foundations to improve and expand its use of IBS, particularly in the SME segment. SMEs in the public and financial sectors could be used as examples for SMEs in underperforming sectors, such as retail and manufacturing. There is considerable advantage in encouraging knowledge transfer between leading and lagging sectors.*

Threats

- Canada will be satisfied with good versus superior international performance: while Canada was still highly placed on global comparisons of nations, in 2002 it dropped in the rankings in some studies, particularly on Internet use and readiness by the business sector. Canada cannot be complacent about continuing to promote higher levels of Internet, computer and telecommunications adoption and implementation.
- Canadian SMEs lagged in multiple IBS adoptions: Canadian SMEs tended to adopt fewer IBS concurrently than U.S. SMEs.
- Continued gains from IBS adoption may be more difficult to realize: there was evidence to suggest that the *low hanging fruit* of IBS adoption has been picked and that future gains will involve more complex systems and processes.
- There may be diminishing returns to promoting increased IBS adoption: getting the message to Canadian non-adopters about the benefits of IBS may become more difficult and expensive.
- There is little known about small Canadian firms. The comparisons between Canadian firms with 50-100 employees and those with 100-500 were mixed, and cannot be generalized to firms with less than 50 employees. There may be real differences between small Canadian firms and their international competitors in terms of IBS adoption, which may help to explain the poor showing of Canada's business sector in international rankings of eBusiness readiness.

Call to action: *Canada has had a good start, but other nations are catching up as evidenced by the international studies. Continued efforts need to be made by Canadian policy makers to promote the adoption and use of IBS. Non-adopting Canadian SMEs should be persuaded to adopt and, in addition, single adopters should be persuaded to adopt a suite of IBS (along the lines of U.S. SMEs) as the evidence suggests that greater adoption leads to greater benefits. Particular emphasis needs to be placed on small business (less than 50 employees), both to understand better the current situation, and to facilitate faster adoption of IBS.*

Key Findings

The following are the key findings of the report:

Adoption of Internet Business Solutions

- As reported in *Net Impact Canada: The SME Experience*, 50.2% of Canadian SMEs are currently using or implementing IBS. A further 20.3% intend to adopt IBS within the next 3 years, while 28.4% have no intention of adopting IBS.
- In this report, by focusing on the patterns of current adoption and potential adoption (i.e., excluding the 28.4 % who have no intention of adopting IBS) between comparable groups in Canada the U.S. and EU, we get a slightly different picture. A higher proportion of SMEs in Canada have currently adopted IBS than in the U.S. To a great extent, this difference can be attributed to adoption by smaller firms (50-100 employees). Canada and the US had similar adoption rates among medium-sized firms (101-500 employees). IBS adoption rates in the EU were lower than in both Canada and the U.S. for both sizes of firms.³
- Current adoption was not consistent across all IBS types. While Canada was dominant in customer development and emarketing solutions, U.S. SMEs had higher adoption rates within sales force automation and supply chain management solutions.
- There were no significant differences between Canada and the U.S. in IBS adoption rates among industry categories, with one exception. The U.S. lagged Canada in IBS adoption by public SMEs.
- Canadian SMEs had higher rates of IBS adoption than EU SMEs across all industry categories.

Financial Results

- Organizations adopting IBS in Canada, the U.S. and the EU experienced similar average increases in revenue of 7.2%, 9.0%, and 10% respectively. Canadian and U.S. firms were significantly more optimistic than their EU counterparts about future revenue gains.
- Customer-focused IBS such as customer development, emarketing and customer service solutions had a larger impact on financial results than internally-focused IBS such as accounting and supply chain management solutions.
- Canadian SMEs achieved superior average decreases in Costs of Goods Sold (COGS) of 10.7% when compared to the U.S. (6.9%) and the EU (1.3%). Much of the Canadian advantage was concentrated among medium-sized SMEs (12.4% vs. 8.8% for smaller Canadian firms).
- The revenue increases due to IBS adoption claimed by Canadian and U.S. SMEs came largely from newly acquired customers.

³ Some of the difference in the adoption rates between Canadian and the U.S./EU studies will also be due to time lag between the studies.

- Increased worker efficiency was most frequently mentioned as the driver of decreased COGS, whereas the lower cost of interacting with the customer was most frequently mentioned as the driver of decreased Sales, General and Administrative costs (SGA).
- Comparisons of financial gains by region and industry sector highlighted the superior performance of the Canadian Public, Communication and Financial sectors. Faring less favourably in comparison were the Canadian Retail, Distribution and Wholesale sector, and the Canadian Manufacturing sector.

Implementation Issues

- The cost of projects and infrastructure was the most frequently mentioned barrier to IBS adoption in Canada, the U.S. and the EU.
- First time IBS adoption was declining in all three regions. The initial IBS boom appears to be over.
- A majority of firms adopted multiple IBS. The number of IBS per firm was highest in the U.S., followed by Canada and then the EU.

Future Adoption of IBS

- Non-adopters in Canada and the U.S. indicated a strong desire to adopt some form of IBS over the next two years.
- Current IBS adopters intend to continue adopting new forms of IBS but with increasing emphasis on internally-focused and supply chain solutions.

Net Impact Canada: The International Experience

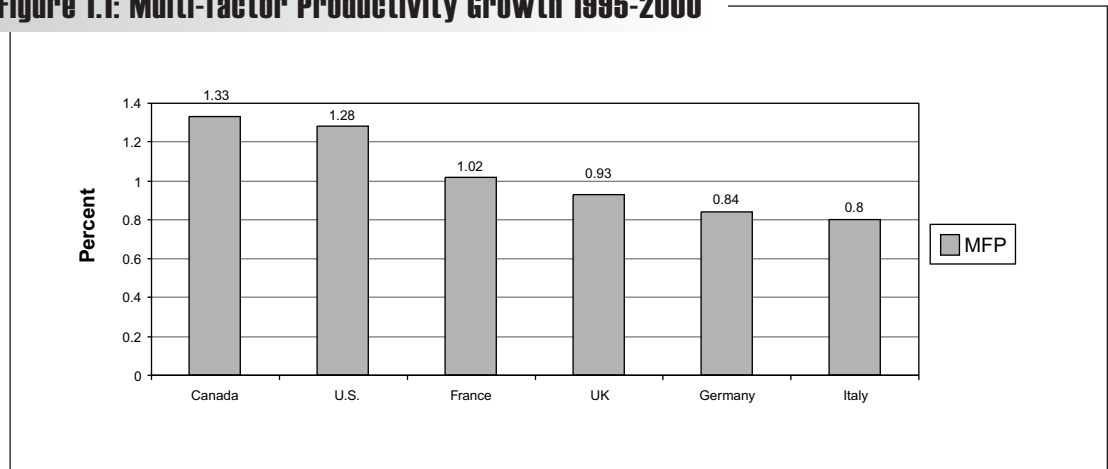
Section 1 – Global Net Impact: Canada’s Place Among Nations

A number of international studies have shown that Canada is among the global elite in terms of economic competitiveness and productivity. Canada has also ranked well internationally on factors relating to Internet infrastructure, eBusiness and Net readiness. Yet, while Canada is very strong on an aggregate level, it is not strong in all areas. In particular, the data suggest that Canadian businesses lag their counterparts in the U.S. and the EU in areas such as Net readiness and Internet commerce. Unfortunately, the data from these studies provide little insight into Canada’s global position in one of the more important drivers of economic performance: small and medium-sized enterprises (SME).

Canada As Global Leader

In recent years, Canada has outpaced most developed nations in terms of economic productivity. An aggregate measure of national productivity by the Organization for Economic Cooperation and Development (OECD), called Multi-Factor Productivity Growth (MFP),⁴ showed Canada to be slightly ahead of the U.S. and significantly ahead of the large EU economies between 1995 and 2000 (see Figure 1.1). MFP growth combines measures of labour and capital productivity.

Figure 1.1: Multi-factor Productivity Growth 1995-2000



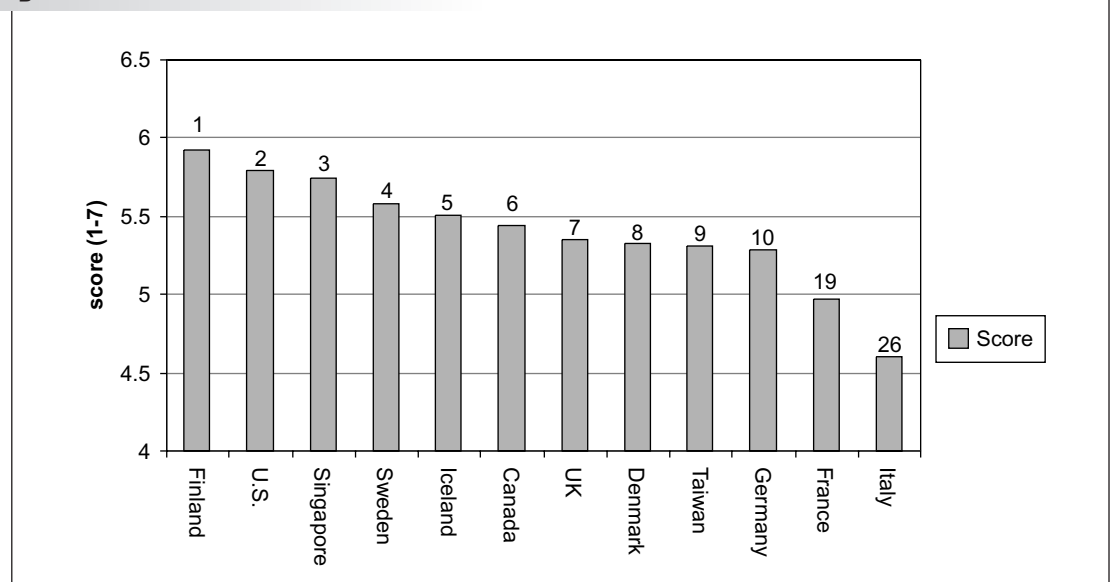
Another indicator of Canada’s strong performance came from the World Economic Forum in its recently released 2002 version of the Global Competitiveness Report (GCR). The GCI is an index based on three categories of variables that have been found to drive economic growth in the medium and long term: technology, public institutions, and the macroeconomic environment. The GCI aims to measure the capacity of the national economy to achieve sustained economic growth, controlling for the current level of development. In 2002, Canada ranked 8th among 74 nations.

⁴ Source: OECD calculations, based on data from the OECD Economic Outlook No. 68. S. Scarpetta et al., Economics Department Working Paper No. 248, 2000; May 2001.

Canada has also been an international leader in terms of Information and Communication Technologies (ICT), Internet infrastructure and innovation. One recently published example of Canada's high standing came from INSEAD, a French business school.⁵ The INSEAD study aggregated data from a wide variety of sources to come up with a measure of national new economy performance, which they named the Network Readiness Index (NRI). The NRI was used to rank 82 nations on a variety of variables including Internet usage, e-commerce, technology infrastructure, and regulatory structure, among others. Many of the variables were broken down into individual, business and government categories.

Overall, Canada ranked 6th among the 82 nations on the full 2002 NRI (see Figure 1.2). This rank represented a jump from 12th place in 2001.⁶ Canada ranked second behind the U.S. among nations with populations greater than 10 million. The study made explicit mention of Canada's significant policy initiatives and public/private partnerships as contributing factors to its high ranking.

Figure 1.2: Net-Readiness Index (NRI)



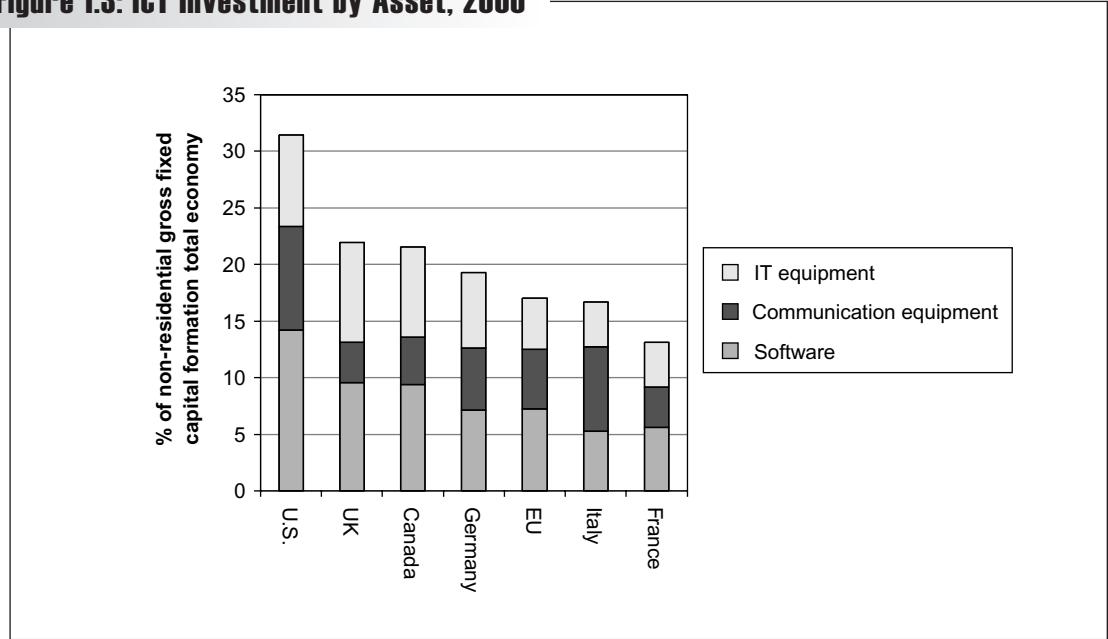
Data produced by the OECD showed Canada to be among global leaders in terms of investment in ICT.⁷ Figure 1.3 shows the percentage of business investment allocated to three types of ICT: IT investment, communication equipment and software. Canada lagged the U.S. on these dimensions, but was on par with the UK and ahead of other large European economies.

⁵ Dutta, S. and A. Jain, The Network Readiness of Nations, INSEAD, 2002.

⁶ The NRI study authors recommend caution in comparing year on year results due to significant methodological changes between 2001 and 2002.

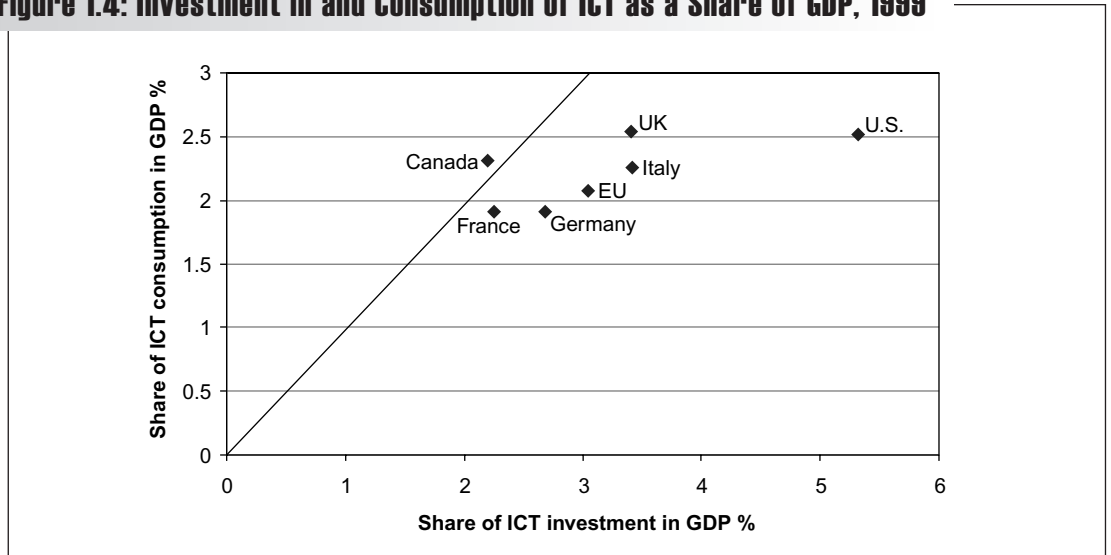
⁷ OECD, Measuring the New Economy, 2002.

Figure 1.3: ICT Investment by Asset, 2000



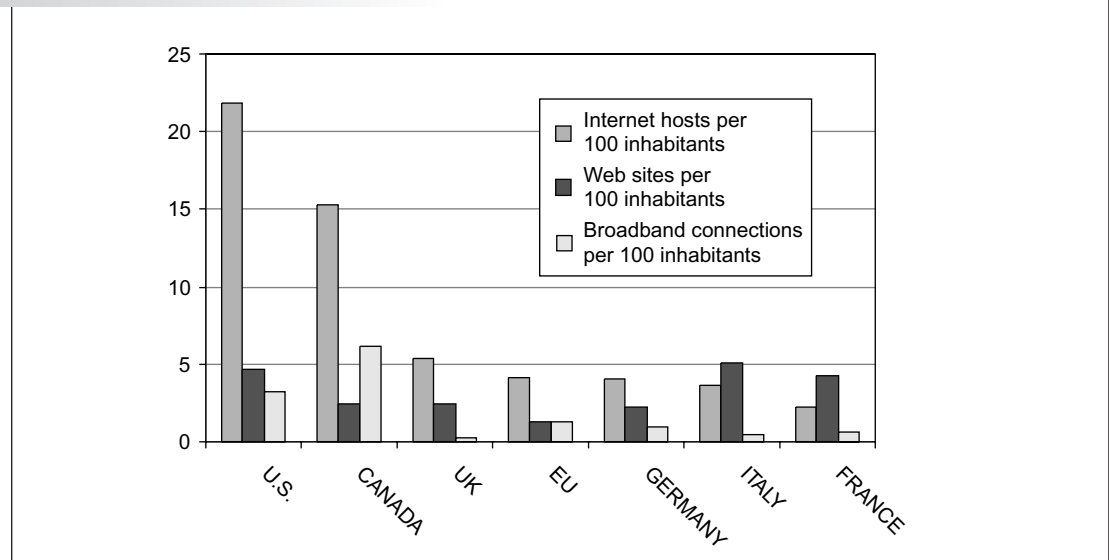
However, as a percentage of GDP, the OECD study found Canada's investment in ICT to be lower than the U.S. and major European nations (see Figure 1.4). In fact, it is interesting to note that Canada was the only nation in Figure 1.4 where ICT consumption was proportionally larger than ICT investment. This suggests that Canada is a net consumer of ICT while the other nations are net investors in ICT.

Figure 1.4: Investment in and Consumption of ICT as a Share of GDP, 1999



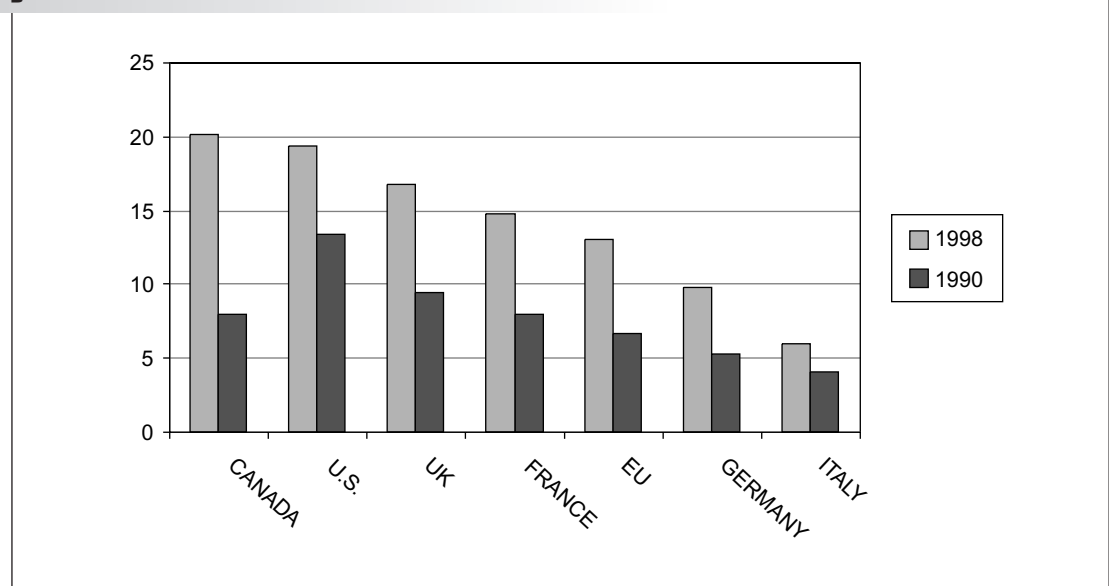
Canada was also well positioned globally on a variety of measures of Internet infrastructure. As Figure 1.5 shows, it was second only to the U.S. in both Internet hosts per capita and Web sites per capita.⁸ Canada led the U.S. and European nations in terms of broadband connectivity, reflecting perhaps the concerted effort by various levels of Government in Canada to promote infrastructure development.

Figure 1.5: Internet Infrastructure



Finally, Canada led the U.S. and Europe in the proportion of patents allocated to ICT (see Figure 1.6).⁹ This suggests that Canada has pursued an innovation agenda in technologies relating to Net enablement and infrastructure development.

Figure 1.6: ICT Patents as a Percent of Total Patents



⁸ Sources: OECD, Communications Outlook 2001, May 2001. OECD, Telecommunications Database, June 2001, OECD, Measuring the Information Economy, 2002.

⁹ OCED, Patent Database, March 2002.

The data presented above clearly show Canada among the top nations globally in terms of economic competitiveness and productivity. They also show that Canada is one of the world's most networked nations. Thus, Canada should be well placed to compete in the intersection of these two areas – namely eBusiness.

Canada As Global Follower

Data from a wide variety of international sources confirm Canada's place among the top nations in terms of economic performance, ICT infrastructure and Net readiness. Yet, there is some evidence to suggest that in the case of eBusiness, Canada has not attained the same level as the U.S. or some European nations. The evidence further shows that while Canadian citizens and the Canadian Government have embraced the Internet, the commercial sector has been slower to adopt eBusiness.

The Net Readiness study from INSEAD placed Canada 6th among 82 nations, up from 12th place in 2001. However, when the data are evaluated at a finer level of detail, some interesting facts emerge. While Canada had very advanced infrastructure and regulatory support for eBusiness, Net readiness in the business sector lagged other nations. For example, while individual (4th place) and Government readiness (6th place) were high, business readiness in Canada was relatively low (12th place). Figure 1.7 shows that Canada was first among key trading partners in both individual and Government readiness, but second to last in business readiness. The opposite was found in the U.S., where individual readiness was 7th, while business readiness ranked 1st among nations.

Figure 1.7: Readiness Sub-Indices

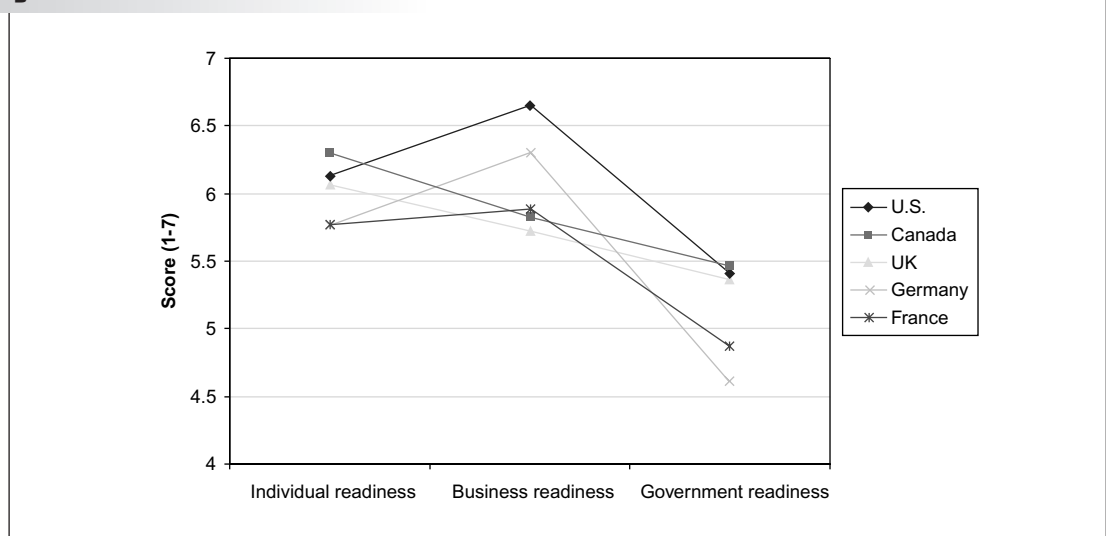
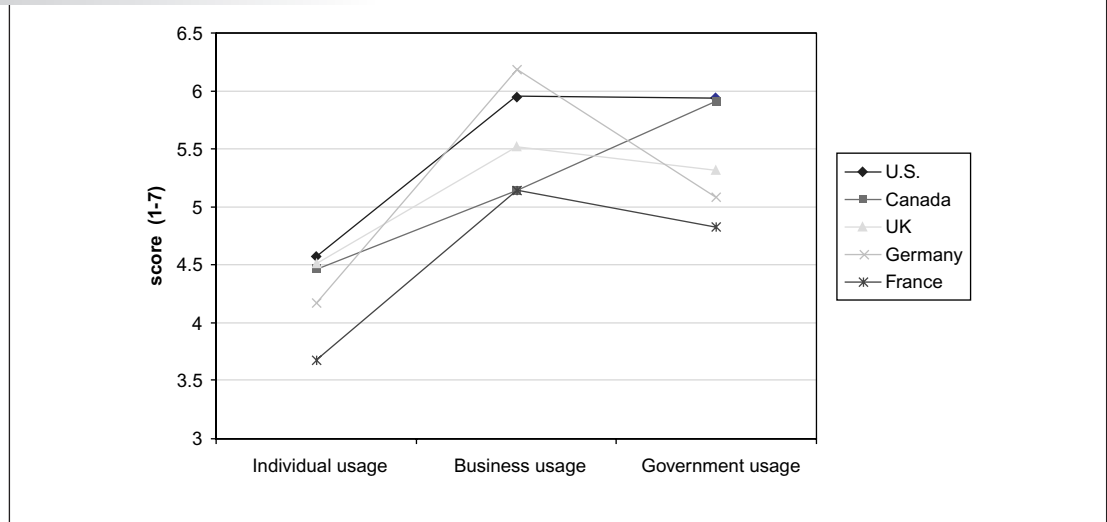


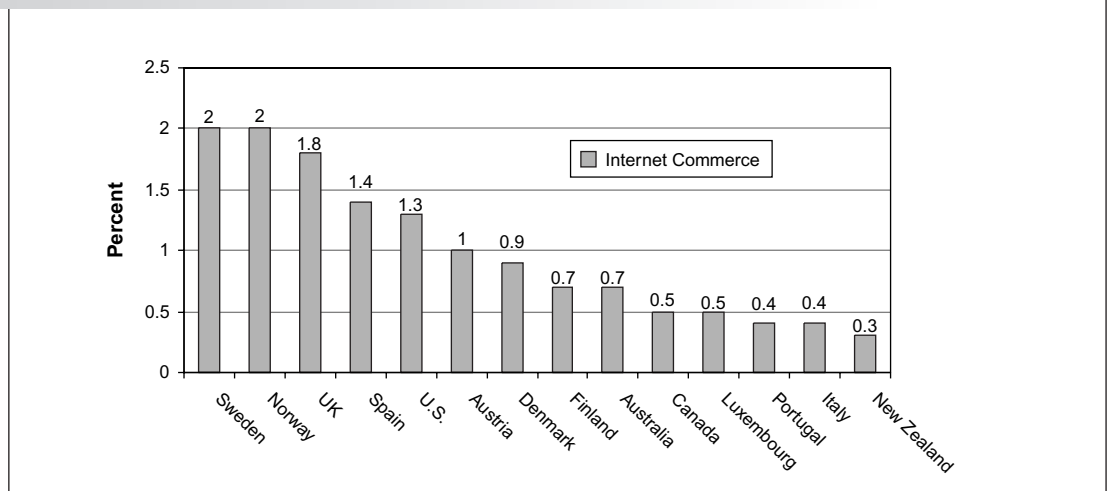
Figure 1.8 shows a similar pattern in the Net usage statistics. Canada's business usage (14th place) lagged both individual (11th place) and Government (7th place) usage. Once again, Canada led the field in both individual and Government usage scores, but was last for business usage. This is quite a dramatic result, particularly as it contrasted with the U.S. and key European nations. Germany, for example was first among the nations listed in Figure 1.8 for business readiness, and middle of the range for individual and Government readiness.

Figure 1.8: Usage Sub-Indices



Data from the OECD appear to corroborate this evidence.¹⁰ For example, Internet commerce as a percentage of total commerce in Canada, at 0.5%, lagged many other OECD nations (see Figure 1.9). Internet commerce in the U.S. was proportionally double that of Canada, and Canadian Internet commerce was only a quarter of that of Scandinavian countries.

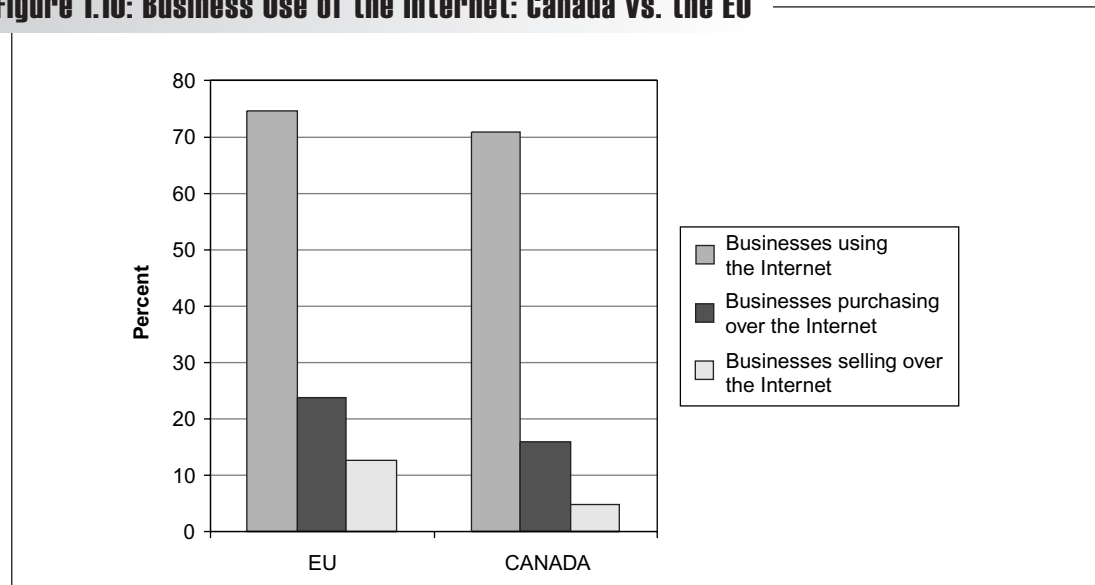
Figure 1.9: Internet Commerce and a Percentage of Total Commerce



¹⁰ OECD, ICT database, August 2002; Eurostat, E-Commerce Pilot Survey 2001.

Other data suggest that Canadian businesses were less likely than their U.S. or European counterparts to buy and sell over the Internet, even though their connection rates were similar. Figure 1.10 shows a comparison between Canadian and European firms' likelihood of using the Internet to buy and sell.¹¹ Despite having similarly high rates of connectivity, Canadian firms were less likely to purchase online and substantially less likely to sell online than European firms.

Figure 1.10: Business Use of the Internet: Canada vs. the EU



Another indication of Canada's global economic position came from the Growth Competitive Index (GCI), produced annually by the World Economic Forum. In 2002, Canada's GCI placed it in 8th place among the 74 nations measured, down from 3rd place in 2001 (see Table 1.1). Canada actually improved its placing for public institutions and macroeconomic environment categories (from 11th to 9th and 13th to 12th respectively). However, Canada dropped from 2nd to 8th place in the technology ranking category, causing the fall in the overall ranking. The drop in the technology rank appears to be linked to a slippage in national performance in innovation and ICT. This result is disappointing as the *Fast Forward* reports have nominated these as priority areas for Canada. Canada's fall in the rankings may also be due to another factor measured in the report: Canada's rank in Government expenditure was 52nd among the 74 nations in the study. The results show that while Canada is still high among nations on measures of productivity and competitiveness, other nations are catching up, and in some cases passing Canada.

Table 1.1:

	GCI ranking			Technology ranking			Public institutions ranking			Macroeconomic environment ranking		
	2002	2001	+/-	2002	2001	+/-	2002	2001	+/-	2002	2001	+/-
U.S.	1	2	1	1	1	0	16	12	-4	2	7	5
Canada	8	3	-5	8	2	-6	9	11	2	12	13	1
UK	11	12	1	15	10	-5	6	9	3	16	12	4
Germany	14	17	3	12	15	3	14	17	3	22	19	-3
France	30	20	-10	28	17	-11	29	20	-9	28	22	-6
Italy	39	26	-13	39	31	-8	37	27	-10	27	23	-4

¹¹ OECD, ICT database, August 2002; Eurostat, E-commerce Pilot Survey 2001; OECD, Measuring the Information Economy, 2002.

The results suggest that Canada's Net readiness is not evenly distributed among user groups. In particular, the Canadian Government and individuals tend to outpace Canadian businesses along a number of dimensions.

Global e-Business and the SME Sector

It should be stressed that the data presented above are based primarily on publicly traded firms. These firms tend to be large, integrated enterprises. Very little data exist that examine Canada's place among the world's economies in terms of performance of its small and medium-sized firms (SME). This is unfortunate since Canadian SMEs deliver 60% of Canada's economic output and generate 80% of national employment.¹² In addition, on a proportional basis, Canada is more reliant on SMEs than the U.S.

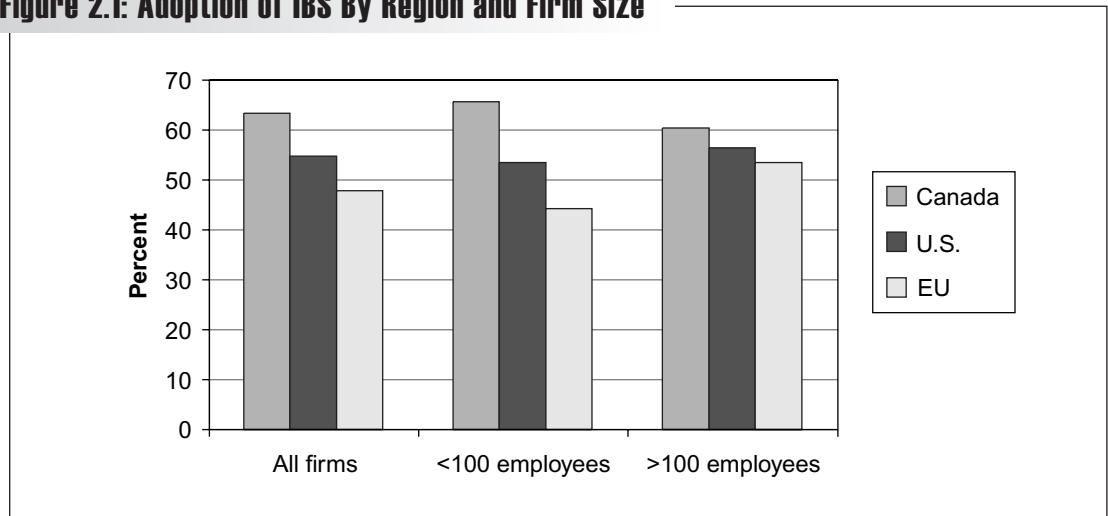
Canada has a telecommunications infrastructure to support advanced information technology, a world class education system and strong Governmental support for the New Economy. Yet, there is some evidence to suggest that Canadian businesses lag their global counterparts in elements of eBusiness performance, at least for large organizations. It is within this context that *Net Impact Canada: The International Experience* examines the global performance of Canada's SMEs with respect to the adoption and use of Internet Business Solutions.

Section 2 – Multinational Comparison of Canadian SMEs

Internet Business Solution Adoption by Region

Canada led the U.S. in terms of the proportion of SMEs that adopted some form of IBS. U.S. firms, in turn, adopted IBS to a greater extent than EU firms. As Figure 2.1 shows, Canada led the two other regions for both small (less than 100 employees) and medium-sized firms (between 101 and 500 employees), although it should be noted that the difference was only statistically significant for the small firm category.

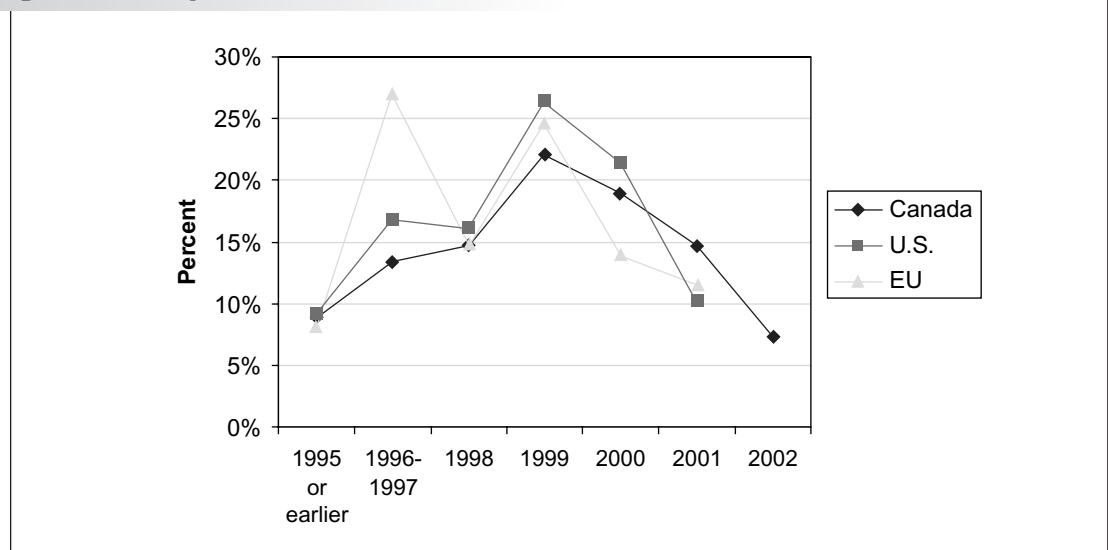
Figure 2.1: Adoption of IBS By Region and Firm Size



¹² Statistics Canada (SEPH) and Industry Canada survey.

This is an encouraging result for Canadian business managers and policy makers. *Net Impact Canada: The SME Experience* concluded that a disturbingly large proportion of Canadian SMEs had no intention to adopt Internet Business Solutions. However, *Net Impact Canada: The International Experience* indicates that Canadian SMEs are actually ahead of key trading partners in terms of IBS adoption. It is also interesting to compare this result to the global statistics presented in Section 1 of this report. Section 1 concluded that Canadian businesses were lagging behind the U.S. and the EU, particularly in Net readiness. While this may be true for large Canadian firms, the Net Impact data appear to show that this is not the case for smaller firms. Furthermore, Figure 2.2 shows that each region has tended to follow a similar IBS adoption pattern over time.

Figure 2.2: Adoption of First IBS Over Time



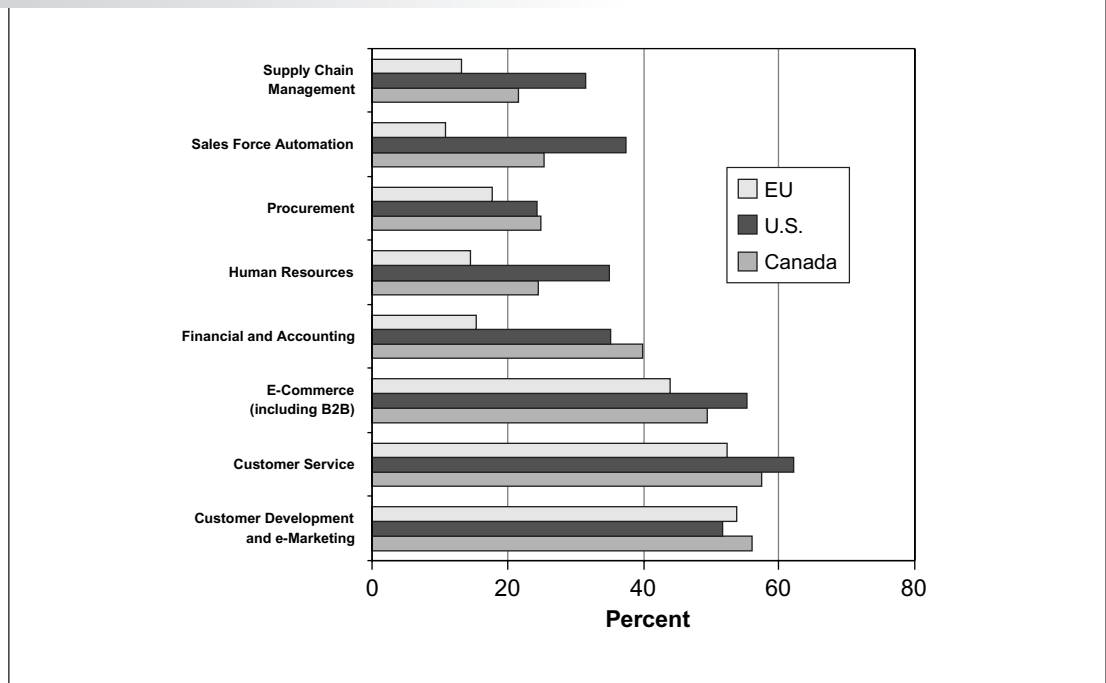
Adoption of Specific Internet Business Solutions

Data were collected on 8 Internet Business Solutions (IBS). For purposes of comparison, these 8 IBS were divided into 2 categories: customer-focused solutions, and internally-focused solutions. Customer-focused solutions included: customer development and emarketing solutions, customer service solutions, and ecommerce solutions (see Appendix 1 for a description of specific IBS). Internally-focused solutions included: financial and accounting solutions, human resources solutions, procurement solutions, sales force automation solutions and supply chain management solutions. Customer-focused solutions are those that support the customer interface, that is, sales, marketing and customer support. Internally-focused solutions are those that support back office applications, internal efficiencies and supply chain partners.

As Figure 2.3 shows, the U.S. led in many of the IBS adoption categories, Canada followed and the EU was third. This result may appear to contradict Figure 2.1 that showed Canadian SMEs had the highest overall adoption rates. The difference is due to the fact that U.S. SMEs tended to adopt more IBS concurrently than either Canadian or EU SMEs.

Canada and the U.S. differed significantly only in terms of internally-focused IBS such as sales force automation and supply chain management. Across all three regions, customer-focused IBS were adopted more frequently than internally-focused IBS. This finding suggests that SMEs are using IBS to improve the reach and range of their product and service offerings, rather than to enhance their operating efficiency, reduce overhead or improve their supply chains.

Figure 2.3: Adoption of IBS by Region (All Firms)



The picture becomes more interesting when small and medium firms are compared separately. Canada had a higher rate of adoption among small firms in customer-focused IBS such as customer development and emarketing than the U.S. (see Figure 2.4). Canada also showed high rates of adoption of financial and accounting and procurement solutions for small firms. For medium firms, this advantage disappeared (see Figure 2.5). The U.S. led in almost all adoption categories for medium-sized firms. EU firms tended to lag in all IBS adoption categories, for both small and medium-sized firms. The adoption of customer-focused IBS outpaced the adoption of internally-focused IBS across all regions and size categories.

Figure 2.4: Adoption of IBS by Region (Small Firms)

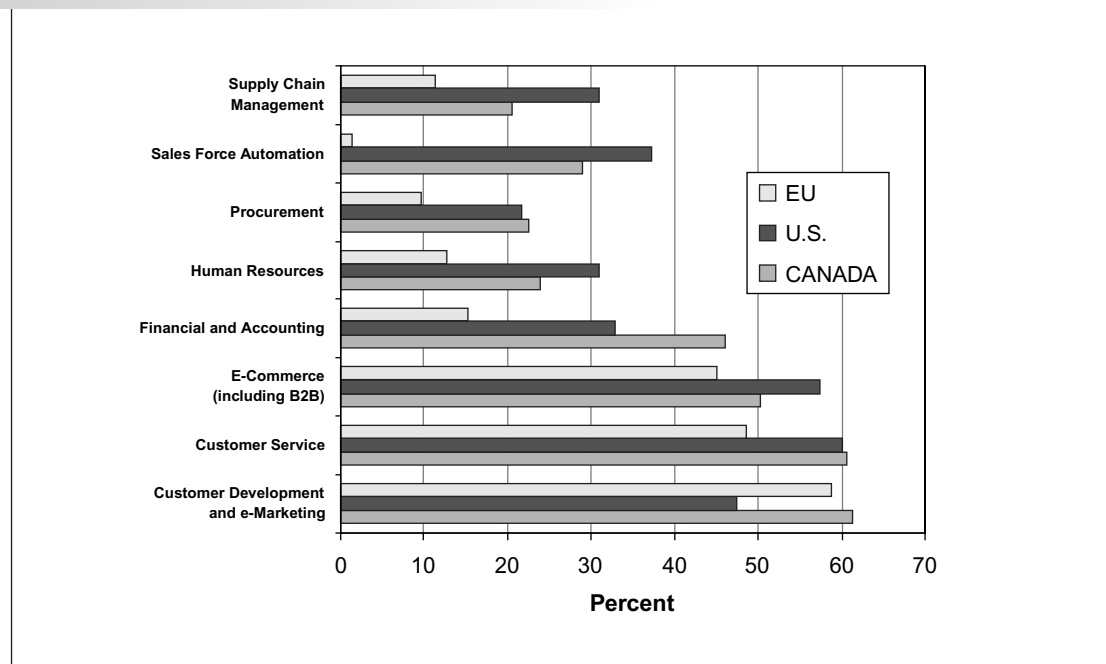
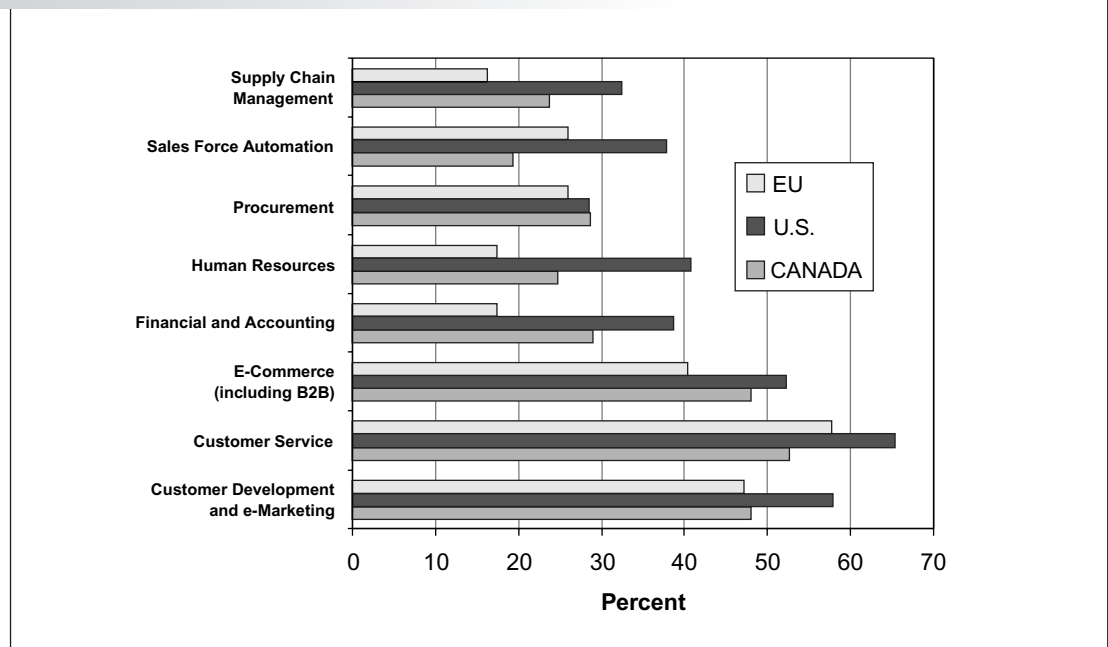


Figure 2.5: Adoption of IBS by Region (Medium Firms)

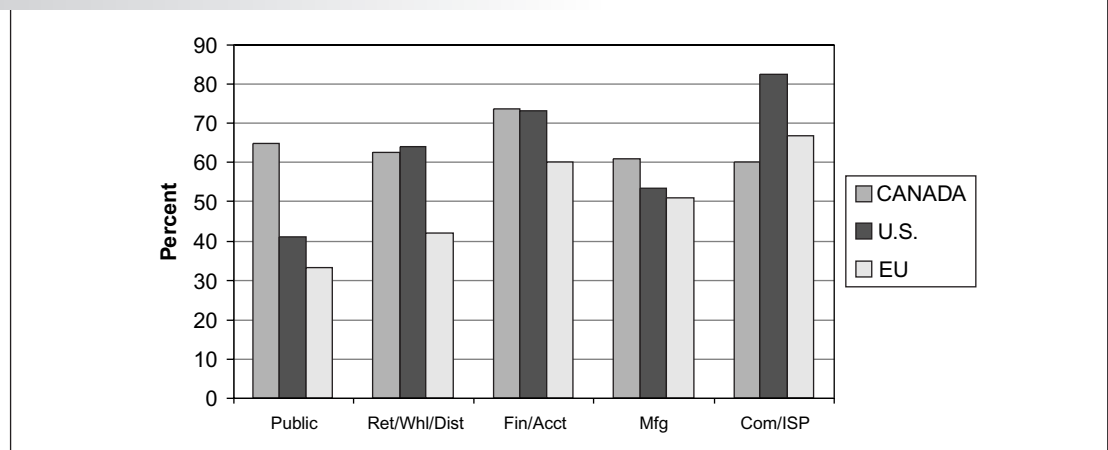


Adoption of Specific IBS By Industry Sector

Similar levels of IBS adoption were found among the three regions for the Financial Services industry and for Manufacturers (see Figure 2.6). Canadian SMEs in the Public sector had significantly higher adoption rates than those in the U.S. and the EU. Much of this difference can be attributed to structural differences between Public sectors in the three regions. However, at least part of this difference will be attributable to the aggressive promotion of e-government initiatives at all levels of Government in Canada. When individual IBS were examined, there was a significantly higher adoption by Canadian Public sector organizations of customer-focused IBS. These findings suggest that SME Canadian Public sector enterprises are using IBS for more than improving internal efficiencies. They are using them to improve service to their various clientele and stakeholders. This conclusion is supported by the data presented in Section 1 of this report, citing Canada’s strong Public sector support for eBusiness initiatives.

The EU tended to lag both Canada and the U.S. across industry categories. The difference was particularly dramatic in the Retail sector.

Figure 2.6: IBS Adoption by Region by Industry

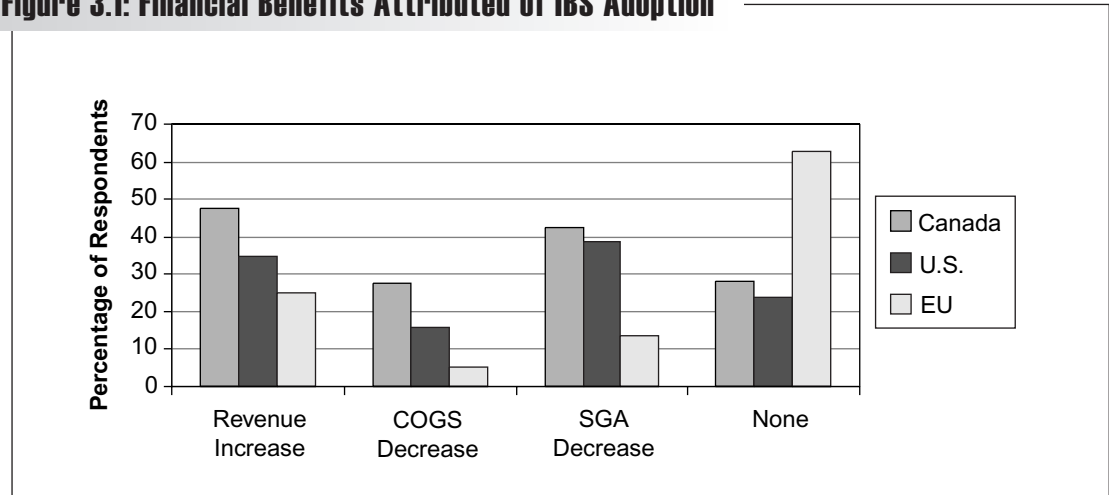


Section 3 – An Overview of Actual and Potential Financial Results

IBS adoption across regions produced substantial financial benefits. However, there were significant differences among regions in the frequency and magnitude of these benefits. In this section, we explore these differences in detail.

Canadian SMEs were proportionally more likely than U.S. SMEs to report increased revenue and reduced cost of goods sold (COGS) as benefits of IBS adoption (See Figure 3.1). Both were more likely than EU SMEs to realize increased revenue, reduced COGS and reduced SGA cost savings. Curiously, more than 60% of EU firms claimed no financial benefit whatsoever from the adoption of IBS. By contrast, this was the case for less than 30% of Canadian and U.S. SMEs. However, SMEs from the EU appeared more optimistic about future benefits than North American firms. These findings suggest that there may be an IBS adoption time lag between EU and North American SMEs.

Figure 3.1: Financial Benefits Attributed of IBS Adoption



The aggregated results hide complex but intriguing patterns. Most of the difference in revenue between Canada and the U.S. could be attributed to higher revenue in three industry sectors and one organization size category: Retail, Public sector and Manufacturing for firms less than 100 employees. A closer examination of this phenomenon was prevented by sample size limitations in all three studies. Furthermore, breaking out revenue, COGS and SGA impacts by IBS was complicated by the fact that organizations adopted on average more than one IBS at a time.

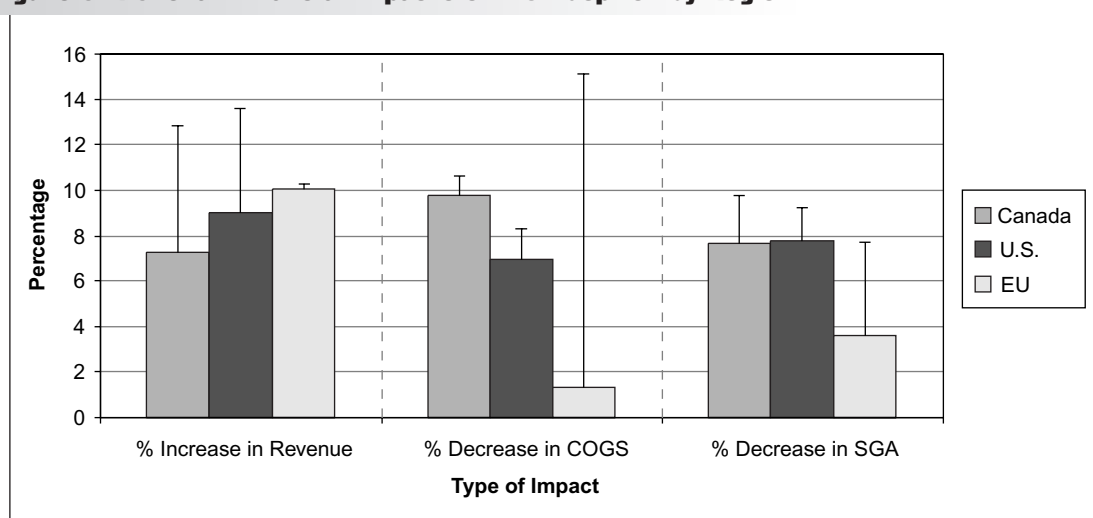
Overall, each of the three regions reported similar percentage increases in revenue attributable to the adoption of IBS, ranging between 7.2% for Canada to 10% for the EU (see Figure 3.2). Both U.S. and Canadian firms were optimistic that revenues would increase by greater amounts once all IBS were implemented; European firms did not expect much more of an increase, perhaps reflecting a maturation of implementation. *[Note: The expected percentage increases or decreases once all IBS are implemented are represented by the “whiskers” in the following charts. The sample sizes for expected benefits are larger than for current ones.]*

There was a significant difference between Canada and the other two regions in the percentage decrease in *Cost Of Goods Sold* (COGS). Canadian firms reported an average decrease of 9.8%, compared with 6.9% in the U.S., and 1.3% in the E.U.¹³ Canada also expected a greater COGS decrease in the future than the U.S. EU firms were far more optimistic than the U.S. or Canada, although the number of European firms reporting was quite small.

¹³ The averages for EU firms for COGS and SGA reflect very small sample sizes, weighted by population proportions. They are not treated as conclusive.

Both Canadian and U.S. SMEs saw *Sales, General and Administrative (SGA)* expenses decrease by notable amounts as a result of IBS adoption – 7.7% and 7.8% respectively. EU savings of 3.6% were significantly less than the other two. All three regions expected SGA costs to drop further when all IBS were implemented, at roughly equivalent rates.

Figure 3.2: Overall Financial Impacts of IBS Adoption by Region



The Financial Impact of IBS Adoption on the Average Firm

Using frequencies or percentage changes may not present a clear picture of the financial impact of IBS adoption. IBS adoption affects multiple parts of an organization. Most SMEs are primarily concerned with how IBS adoption affects the bottom line.

An Illustrative Firm

For purposes of illustrating the potential financial impact of implementing IBS, a hypothetical firm will be used. This firm has annual Revenues of \$10M, from which it deducts \$8M in Cost of Goods Sold (80%) for a gross profit of \$2M (a 20% gross margin). It then deducts a further \$1M in Sales, General and Administrative expenses, for a net profit of \$1M (a 10% net margin).

We will employ a simple hypothetical firm (similar to *Net Impact Canada: The SME Experience*) to illustrate the relationship between performance gains using the rates of improvement from the survey results above. The following are average increases in Revenues and decreases in COGS and SGA for each study:

	Canada	U.S.	EU
% Revenue Increase	7.2	9.0	10.0
% COGS Decrease	9.8	6.9	1.3
% SGA Decrease	7.7	7.8	3.6

Applying these average benefits, a hypothetical firm from each of the study regions would achieve the following increases in *Net Profit*:

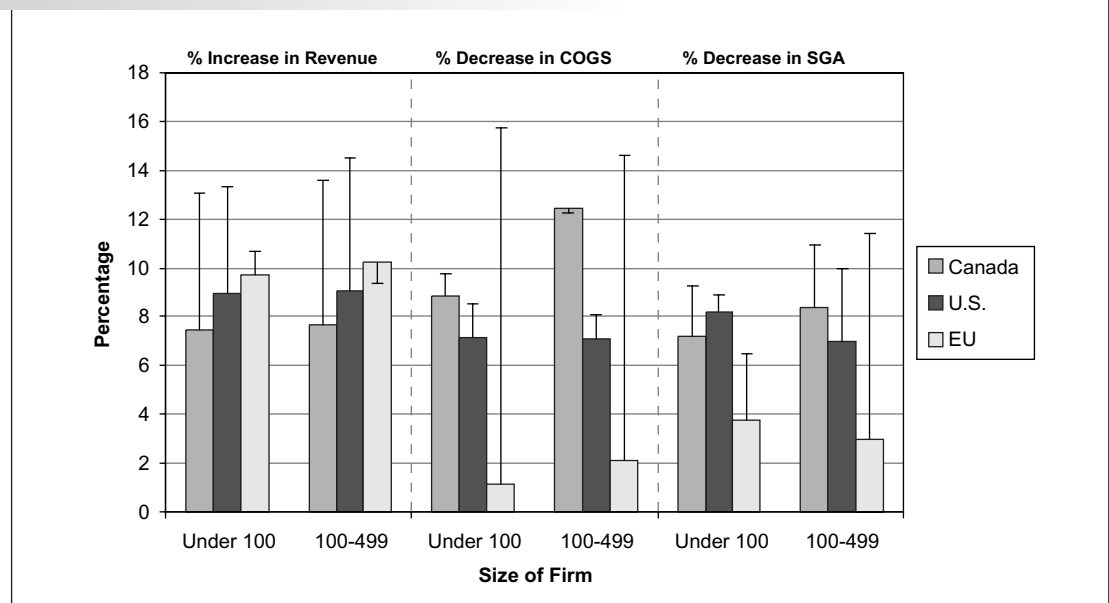
(in millions)	Base Case	Canada	U.S.	EU
Revenue	\$10	\$10.72	\$10.90	\$11.00
COGS	8	7.22	7.45	7.90
Gross Profit	2	3.50	3.45	3.10
SGA	1	0.92	0.92	0.96
Net Profit	1	2.58	2.53	2.14

Each column represents a comparable average firm (and potential competitor) in each region. The higher rates of revenue increase experienced by SMEs in the EU and the U.S. are more than counterbalanced by reduced COGS for Canadian firms. In addition, higher SGA savings for U.S. and Canadian firms combined to deliver the highest financial benefits for the hypothetical Canadian SME, with a slight benefit over the U.S. firm, and a substantial benefit over the EU firm.

Effects of Firm Size on Financial Impacts

Figure 3.3 shows the financial impacts of IBS adoption for each region, segmented by firm. For revenues, there were essentially no differences in average revenue increases between sizes for the three regions. For SGA, medium-sized firms tended to expect larger cost decreases than small firms (once all IBS had been implemented). For COGS, significant differences were found. As was noted above, Canadian firms reported larger decreases in COGS than their U.S. and EU counterparts, regardless of size. More importantly, medium-sized Canadian SMEs had significantly higher COGS savings than small Canadian SMEs, which in turn had larger decreases than U.S. and EU SMEs. In terms of anticipated benefits, EU firms expected much larger COGS savings than SMEs in Canada or the U.S.¹⁴

Figure 3.3: Financial Impacts by Region and Size



Financial Impacts of Individual IBS

The types of Internet Business Solutions that were implemented might assist in explaining some of the differences in financial impacts. Key customer-focused IBS (e-marketing, customer service and e-commerce) were consistently ranked by all regions as drivers of increased revenue and reduced costs (see Table 3.1). Surprisingly, customer-focused solutions were also ranked as having a greater impact on costs than internally-focused solutions (financial/accounting, human resources and sales force automation) as well as those solutions focused on the supply chain (procurement and supply chain management). It was also interesting to note that Canadian firms ranked customer service as having the greatest financial impact on both revenues and costs, whereas U.S. and EU firms ranked ecommerce as the most important revenue driver.

¹⁴ Again, European data should not be treated as conclusive, due to small sample sizes.

Table 3.1: Top 5 Ranking of IBS with Greatest Financial Impact

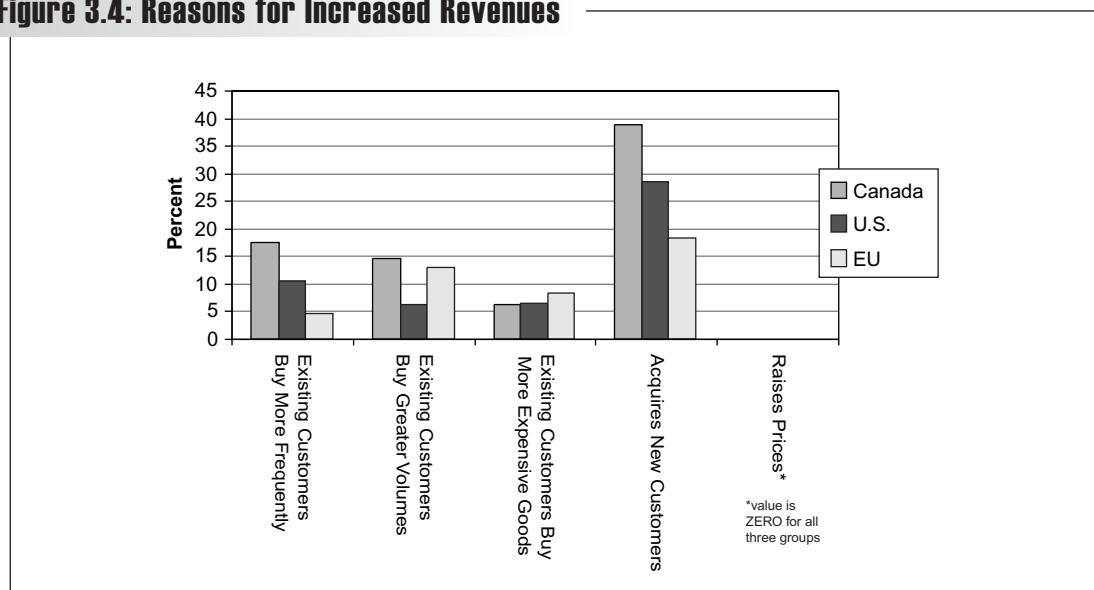
	Revenue Increase			COGS Decrease			SGA Decrease		
	Canada	U.S.	EU	Canada	U.S.	EU	Canada	U.S.	EU
Customer Devt. and e-Marketing	2	2	2	2	3		5	4	2
Customer Service	1	3	2	1	1		1	1	
E-Commerce (including B2B)	3	1	1	3	2	1	2	2	1
Financial and Accounting	4	4		3			3		
Human Resources				5					
Procurement				4				4	
Sales Force Automation	5	5	4		5		4	3	
Supply Chain Management	5	5	3	5	4			5	

Drivers of Financial Improvements

In all regions, survey respondents were asked about the drivers of financial improvement attributable to IBS adoption. Canadian organizations tended to respond more frequently to these questions than those in the U.S. and the EU. For COGS and SGA, sample sizes precluded comparisons with the EU. The question tended to illicit low response rates, suggesting some uncertainty in the mechanism by which IBS implementation resulted in performance. This is consistent with earlier reported Canadian and U.S. Net Impact study results, which found a general absence of metrics to monitor the specific impact of IBS adoption.

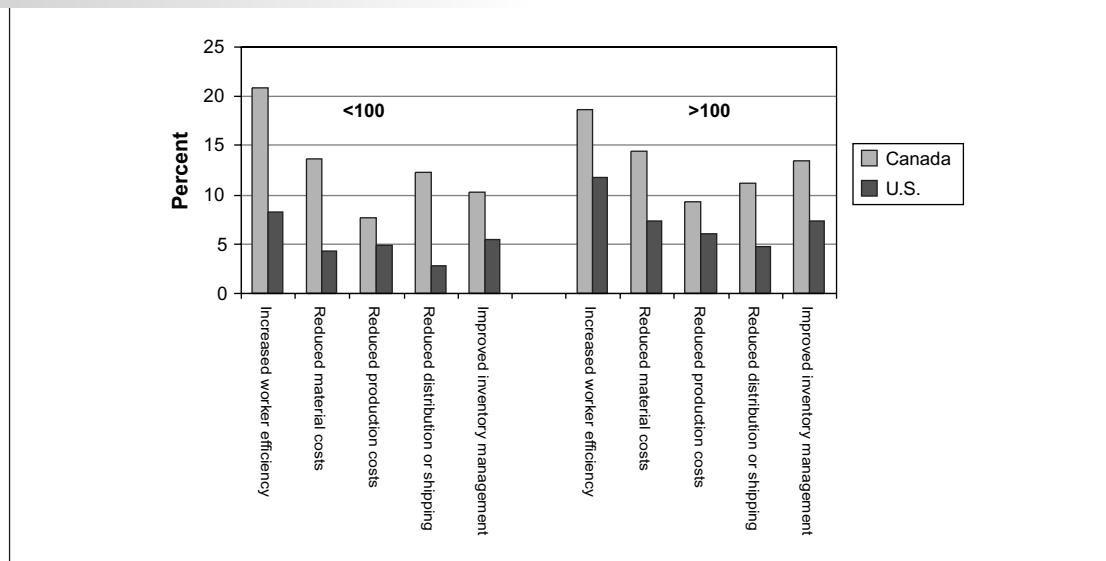
All regions were consistent in ranking customer acquisition as the number one reason for the revenue increases attributed to IBS adoption (see Figure 3.4). Other reasons only received modest support. IBS adoption did not precipitate an increase in product or service prices for SMEs in any region. These findings suggest that financial gains from IBS adoption came from either increased efficiency through reduced costs, or increased revenue through the acquisition of new customers.

Figure 3.4: Reasons for Increased Revenues



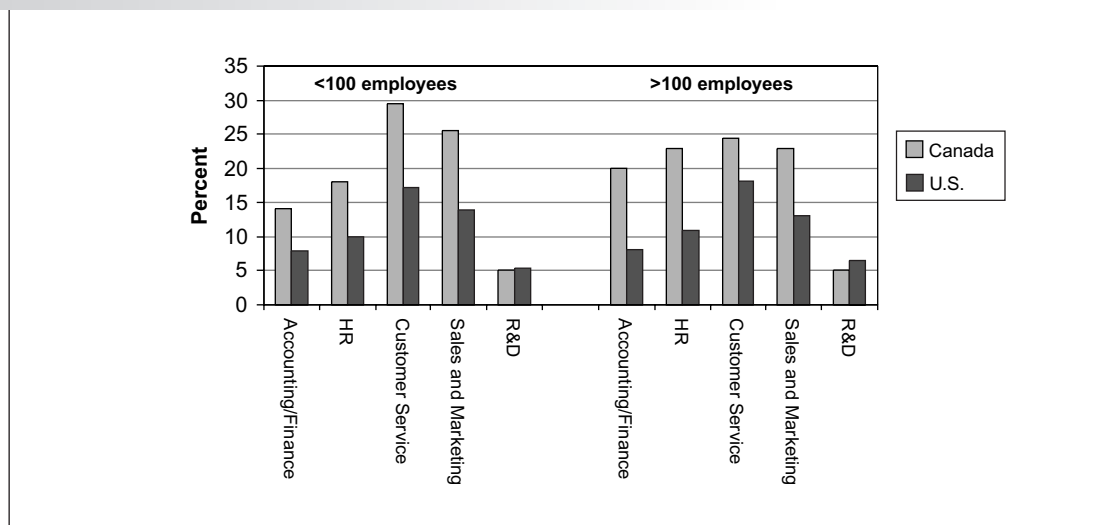
For both Canada and the U.S., the drivers of reduced COGS were many and varied. Increased worker efficiency was most frequently cited as the major cost driver, followed by reduced material costs and improved inventory management (see Figure 3.5).

Figure 3.5: Reasons for Decreased COGS



The reasons for SGA decreases were dominated by changes in customer service and sales and marketing processes (see Figure 3.6). Interestingly, changes in internally-focused practices (i.e., accounting/finance and human resources) versus customer-focused practices (i.e., sales and marketing) seemed to assume greater importance in medium-sized Canadian firms than in smaller firms. This may indicate that the performance improvement strategy associated with IBS adoption is different for small versus medium-sized firms. It is possible that medium-sized firms focus more on using IBS to manage the growing complexity of their internal organizational processes.

Figure 3.6: Reasons for Decreased SGA by Organization Size



The Magnitude of Financial Benefits By Industry Sector

The magnitude of the financial improvements experienced by SMEs in the different regions varied significantly by industry. In this section, differences in rates of improvement are presented with the understanding that they are only the roughest of benchmarks for what can be achieved. Results varied significantly between individual organizations. The important summary observation is that IBS adoption in all industries resulted in significant financial benefits with the promise of more benefits to come.

Impact on Revenue by Industry Sector

There were some notable differences in the magnitude of revenue increases among the three regions when examined by industry sector (see Figure 3.7). The highest revenue increases were found in the Communications and Public sectors. The lowest were in the Manufacturing and Retail sectors.

In Communications, Canada led its EU and U.S. counterparts slightly in the magnitude of reported increases and lagged by a small amount in expected future increases. Application of IBS technology in this industry, across regions, may be mature. One would expect this industry to be the lead user of its own component technologies.

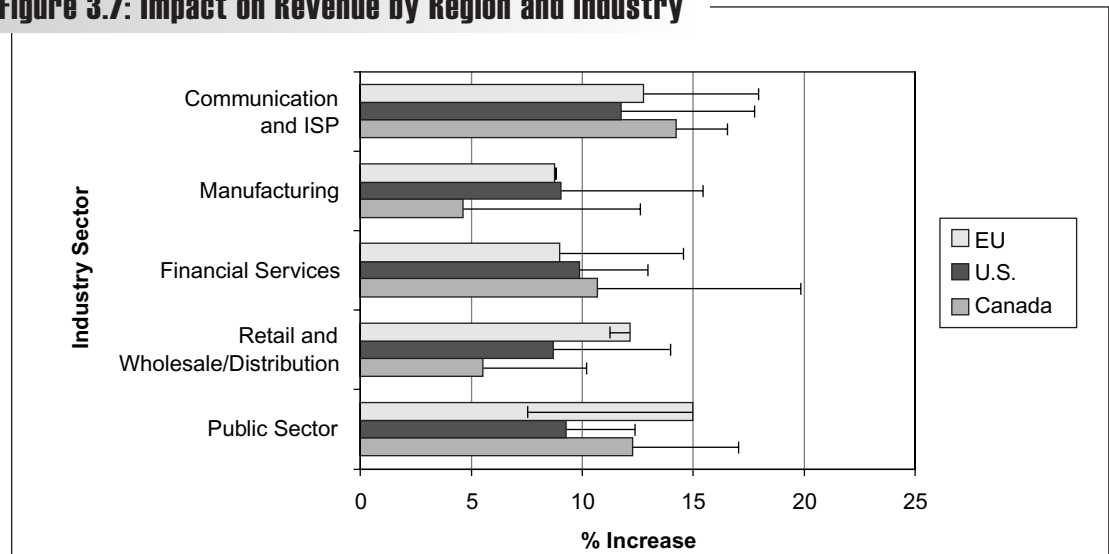
The Public sector includes organizations such as health clinics, libraries, school boards, and others in addition to various Government agencies. The Canadian Public sector reported higher increases in revenues than the U.S., and still higher revenues after implementation of all IBS. Unfortunately, no conclusions could be drawn regarding the EU Public sector, since only a few organizations reported. Comparisons between regions were complicated by differences between what is public and private in each economy but there is evidence, both from the data presented here and from the data presented in Section 1, that the Public sector in Canada is in the forefront of a global e-government trend to bring services to the general public in a cost-effective manner.

Within Financial Services, there was no regional difference in the increase in revenues experienced so far. However, Canadian firms expected much greater increases than either U.S. or EU firms after implementation of all IBS.

Canadian firms significantly lagged U.S. and EU firms in the Manufacturing sector – 4.7% vs 9.0% and 8.7% respectively. Although Canada expected somewhat greater benefits after implementation of all IBS, U.S. companies expected higher increases still, by almost 3%. Given the fierce competition between the Canadian and U.S. Manufacturing sectors, any difference in the ability to capture and retain customers between the two countries must be cause for concern.

Finally, Retail sector Canadian SMEs experienced lower increases in revenue than either U.S. or EU firms. The future expected revenue gains of Canadian SMEs matched those of the EU, but lagged significantly behind those of U.S. firms (10% for Canada vs. 14% for the U.S.). Given the size of this sector and the number of people employed within it, discovering the reasons for this performance lag should be a priority for investigation.

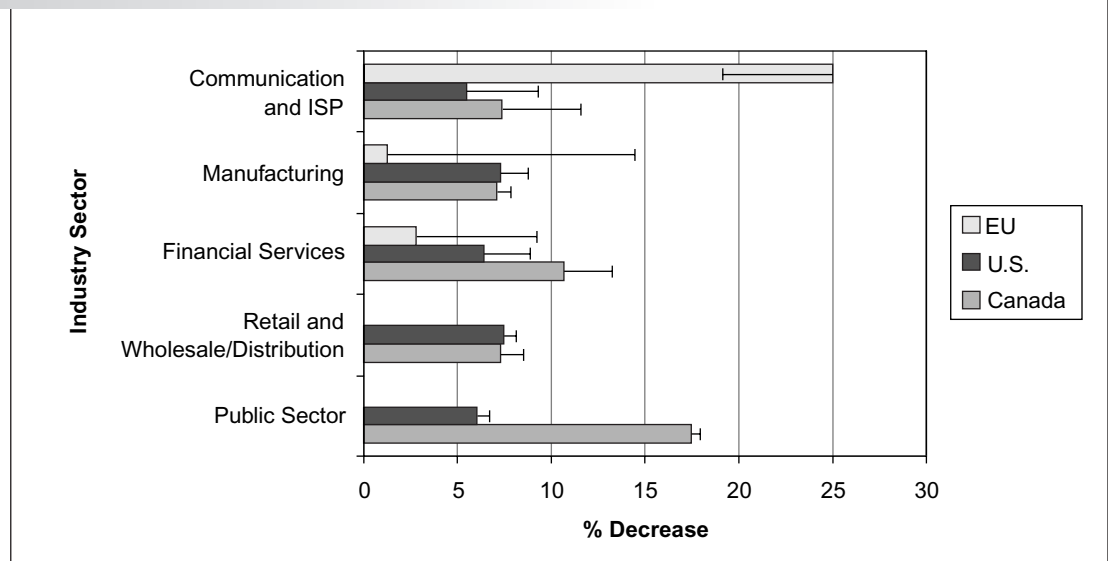
Figure 3.7: Impact on Revenue by Region and Industry



Impact on the Cost of Goods Sold by Industry Sector

U.S. firms within each sector reported roughly the same decrease in the Cost of Goods Sold (between 5.5% and 7.5% – see Figure 3.8). They also expected the same savings (between 8% and 9.3%) after implementation of all IBS, except in the Public sector, where expected savings were relatively unchanged (6.7%). Canadian firms, however, showed substantial differences between sectors. Whereas firms in the Communications, Manufacturing, and Retail sectors showed decreases in COGS similar to those of U.S. firms, Canadian Financial Services companies and organizations in the Public sector reported much higher COGS-impact.

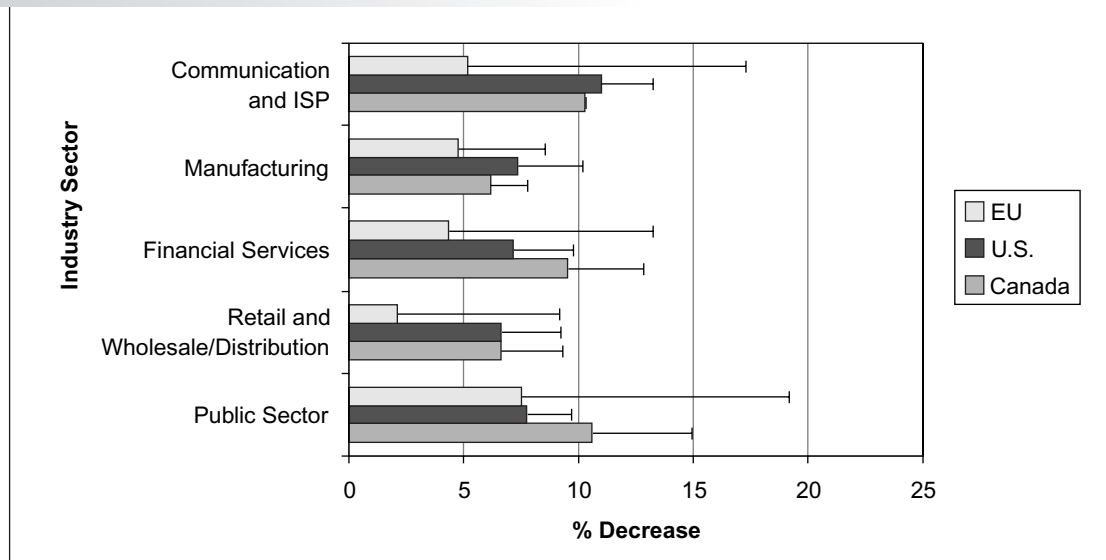
Figure 3.8: Impact on COGS by Region and Industry



Effects on Sales, General and Administration Expenses

SGA effects are similar to those for COGS (see Figure 3.9). For U.S. firms, current and expected savings were approximately the same in all sectors except Communications, which was about 3% higher. Canadian firms in Financial Services and the Public sector again led their U.S. counterparts, but by smaller amounts than in COGS savings. EU firms generally lagged in every sector, save for the Public sector. However, EU SMEs were optimistic that they would achieve savings that matched, or even surpassed, those expected by their U.S. and Canadian counterparts. Since fewer firms reported these results proportionately than in the U.S. and Canada, the lower results may reflect a time lag in IBS adoption between the EU and North America.

Figure 3.9: Impact on SGA by Region and Industry



Summary of Canadian Financial Impacts

Canadian SMEs in Manufacturing and Retail/Wholesale lagged the U.S. and Europe in the magnitude of their percentage revenue gains. Canadian SMEs led slightly in Financial and Public sectors. Canadian and U.S. organizations expected future gains but of a smaller percentage than those experienced to date. The slowing of the gains may reflect the end of the implementation process that many organizations began over two or more years ago.

Canadian firms posted significantly greater COGS decreases in the Public sector than their U.S. counterparts. Future expected decreases in COGS were smaller than expected revenue increases. This finding suggests that the cost-reducing potential of IBS is much more limited than their revenue enhancing potential. That being said, small percentage decreases in COGS flow directly to bottom line profitability whereas revenue enhancements have associated costs.

Modest SGA cost decreases were experienced across sectors and countries. Once again, Canada's Financial and Public sectors led the U.S. and the EU in the magnitude of the gains. Compared to COGS, organizations in all three regions saw a greater upside for future SGA cost savings.

Section 4 – Implementation Issues

Cost was the largest barrier to IBS adoption reported by SMEs that had already been through the adoption process (see Table 4.1). Interestingly, hiring new employees with appropriate technical skills or training existing workers was less of a barrier for Canadian firms than it was for firms in the U.S. or EU. By contrast, SMEs in Canada appeared to be more concerned with the time necessary to implement Internet-based solutions.

On average, U.S. SMEs reported adopting 3.6 different IBS. In comparison, Canadian firms adopted 3.1 and EU firms adopted 2.5. On a per firm basis it may be argued that U.S. firms lagged Canadian firms in IBS-related financial benefits, but the U.S. firms were doing more. Preliminary regression analysis suggested that financial results and multiple IBS adoption were positively related. In other words, revenues were higher and costs were lower in organizations that had adopted more than one IBS. Thus, if these results hold for a variety of firm sizes and industries across Canada, there may be value in counseling SMEs to develop an IBS strategy that goes beyond a "one-shot" solution.

Table 4.1: Ranking of Barriers

	Canada	U.S.	EU
1. Dollar cost of projects/Cost of new infrastructure	1	1	1
2. Time to implement projects	2	5 (tie)	4
3. Uncertain return on investment	3	6	5
4. Worker training	4	2	2
5. Lack of upper mgmt. supp./direc./planning/Org. inertia	5	4	3
6. Can't hire people with necessary technical skills	6	3	
7. Bad experiences in the past	7	7	6
8. Regulatory barriers		5 (tie)	7

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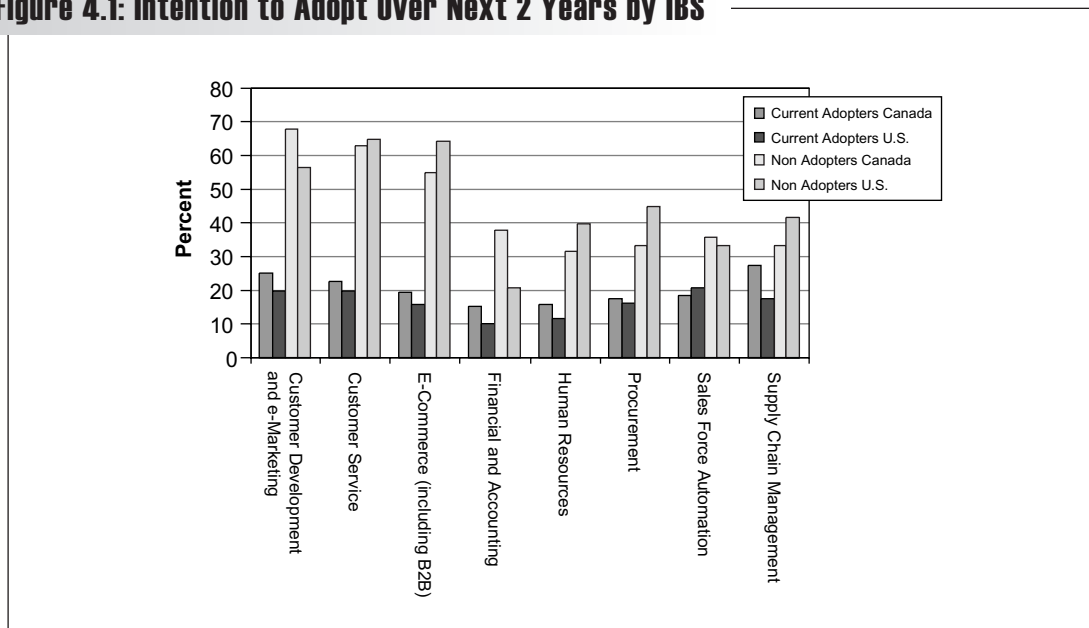
The Potential Adoption of Internet Business Solutions

Both Canadian and U.S. firms felt equally strongly that they would adopt a new type of IBS over the next 2 years. About 60% of current adopters intend to expand their IBS capability. The overall picture is that IBS solutions are here to stay regardless of economic downturns and turbulence in the ICT sector.

Compared to the U.S., Canadian SMEs who had already adopted IBS were significantly more aggressive in their plans for future adoption (see Figure 4.1). Among existing adopters of IBS, supply chain management appeared to be a high priority. In particular, Canadian Manufacturing firms seemed to be significantly more aggressive in this regard than their U.S. counterparts.

As in the past, first time adopters tended to favour customer-focused IBS. Canadian organizations displayed a significantly higher interest in the adoption of customer development and financial accounting IBS, when compared with their U.S. counterparts for small firms. Interestingly, small U.S. firms were more aggressive in their intentions to adopt supplier-focused IBS such as procurement and supply chain management.

Figure 4.1: Intention to Adopt Over Next 2 Years by IBS



Appendix 1

Internet Business Solution (IBS) Definitions

Customer Development and e-Marketing

Marketing applications to automate activities such as marketing campaign management and planning, campaign execution, customer segmentation, list management, database marketing, direct marketing, telemarketing, marketing encyclopedia, electronic catalog, Web activity analysis, Web advertising, and personalization functions.

Customer Service and Support

A combination of technological development (the Internet being a primary factor), call centres and the Internet medium to maximize customer calls and requests to handle multiple modes of communication such as fax, email, and Internet in both live agent and automated formats, often integrated with customer databases.

e-Commerce

Solutions that enable the end user to sell products and services over the Internet. This could be Web-based selling, using digital television or a mobile telephone, or increasingly, machine-to-machine transactions using the Internet.

Finance and Accounting

Internet-enabled enterprise resource planning applications that enable enterprises to manage financial and accounting information across the organization and interact with business partners, suppliers, and customers.

Human Resources

Internet-enabled enterprise resource planning applications that enable enterprises to manage human resource information across the organization.

Procurement and MRO

Describes the range of solutions which use the Internet to manage internal procurement processes and maintenance and repair operations, such as authorisation and billing, and order generation and management to external suppliers.

Sales Force Automation

Internet-enabled sales automation applications to help the sales professional organize and collect information about territories, customers, products, competitors, marketing campaigns, and pricing. Features include some combination of a customer database, lead qualification, integrated word processor, report writer, address and phone card system, and tickler file. In addition, many products offer an opportunity management system, sales order or sales configuration tools, marketing encyclopedia, reporting and forecasting, and some kind of Internet or Web access, allowing rapid and global information sharing within a company and between companies.

Supply Chain Management

SCM solutions are organized around the specific business processes, technologies and physical architectures that connect an organization to its suppliers and trading partners using Internet technologies.

The Net Impact Canada Study was produced by the Benchmarking and Metrics team of the Canadian e-Business Initiative (CeBI), in collaboration with:

Industry Canada

Cisco Canada

Cisco Systems

The Momentum Research Group

IDC Canada

York University

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