Understanding the costs and benefits associated with advanced e-business solutions in Canadian small and medium-sized enterprises

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Executive Summary

This report presents the findings of a study of e-business adoption among Canadian small and medium enterprises (SMEs). The objective of the study was to develop a better understanding of the costs and benefits of e-business adoption, and to explore ways to encourage further uptake and use of e-business technologies among Canadian SMEs.

More than 20 SMEs operating in the professional services or retail sectors and based in New Brunswick, Ontario, Alberta or British Columbia were interviewed for this study. Interviews were also conducted with 19 government organizations (including local and provincial economic development agencies) and associations representing Canadian businesses and the technology sector. Interviews were conducted in February and March 2011.

Interviews revealed that the Canadian SMEs who participated in this study are making extensive use of e-business technologies to engage with their customers, to extend their geographic reach, to increase efficiencies in their business processes, and to sell products and services over the Internet. Specific applications and services in use include customer facing websites, intranets and business facing websites, email, telephony, social media and cloud computing. These SMEs generally have a good understanding of the costs and benefits of e-business, and understand and manage the associated risks.

Enabling Conditions
The research identified several enabling conditions for e-business adoption by SMEs. SMEs and those they intend to engage with must have access to good supporting infrastructure (e.g. quality broadband connectivity), and potential clients/customers must be digitally literate. E-business uptake is encouraged when SMEs can see how other businesses and agencies make use of the technology, thus leading by example enables adoption. Strong community and peer support is another important enabler. Community efforts to develop information and communication technology infrastructure, create a culture of use and encourage its uptake within the community also help to foster e-business adoption, as does information sharing among local businesses.

Drivers of Adoption
SMEs will adopt e-business technologies when there is a clear business case for doing so. Adoption is driven by client needs and expectations, meaning that in some instances clients encourage SMEs to make services availably electronically, and in other instances SMEs choose not to deliver services electronically because their clients are not yet ready for such approaches. When e-business solutions are deployed, they result in increased productivity, improved business promotion and an expanded business presence. SMEs understand that they can differentiate themselves from competitors with effective e-business solutions in place, and are very strategic in deciding which solutions to deploy.

Adoption Barriers and Risks

Representatives of agencies and associations noted that there are many Canadian SMEs who are not making effective use of e-business solutions, and the SMEs interviewed for the study also noted that there are many barriers that inhibit uptake. A central concern for all SMEs is time. It takes time to assess and implement e-business technologies, and this is time that could be spent on other aspects of the business. The cost of e-business solutions is a concern for many SMEs, although it is noted that where there is a clear business case to adopt a particular solution efforts will be made to do so. There are technical barriers, including software that is not designed for Canadian business processes (e.g. doesn't support the Canadian tax system), and software that is designed for much larger businesses and doesn't scale appropriately for use by SMEs. Lack of knowledge among SMEs is also a concern, particularly with regard to capacity to assess various e-business solutions. A related barrier is that SMEs either don't have access to, or do not trust, solutions providers. Some SMEs are not interested in growing, and resist e-business solutions as they are perceived to be a pathway to growth.

The SMEs who are using e-business technologies suggest that while there are risks, the risks are manageable (e.g. processes are in place to assure security of transactions, privacy of client data). The biggest risk identified was that of not using e-business technologies, as clients increasingly expect to be able to engage with all types of businesses in an online environment.

Encouraging Adoption

Education is central in encouraging further e-business adoption. SMEs clearly indicated a preference for specialized training, with a focus on their own particular business circumstances. Learning from peers (other local businesses, or other similar businesses across the country and around the world) is highly valued, and a case study approach is recommended. Targeted incentive programs may be effective in encouraging further uptake.

Recommendations

- Development of sector-specific case studies is viewed as an effective means to directly engage SMEs in the adoption of e-business technologies. Case studies can highlight leaders in particular sectors, and explore the successes and failures of various e-business initiatives.
- Partnerships are a key way to connect SMEs with those who can provide assistance in developing e-business strategies. Business associations, technology providers and community economic development agencies have expertise and are keen to work with SMEs. A partnering approach can ensure that efforts to foster e-business adoption meet the SMEs' needs. Financial and management support could be provided to foster partnerships
- Other specific actions include targeted actions to encourage IT professionals to connect with SMEs and to encourage technology-based education across the secondary and post-secondary sectors.
- Additional recommendations are provided in the report.

Future Research

It should be noted that this is a small scale study. While the findings cannot be generalized, they offer many interesting insights into SME use of e-business technologies today, and provide a basis for further investigation of the ways in which Canadian SMEs can benefit from increased use of e-business solutions. In particular, it is recommended that research be conducted across additional sectors with a view to understanding specific challenges each sector faces in making better use of e-business technologies. It is also important to gain a better understanding of how technologies can enable and support strategic business objectives. This study identified a number of incentives that could be deployed to further adoption, and it is suggested that these be investigated further. An inventory should be made of the many programs in Canada that assist businesses in making better use of information and communication technologies. A study of international best practices would be very helpful in identifying ways to improve e-business adoption outcomes in Canada. As the use of mobile technologies is increasing rapidly, it is recommended that future research explicitly consider the challenges and opportunities presented by mobile interaction between businesses and their customers.

1.0 Introduction

This report investigates e-business adoption by small and medium enterprises (SMEs) in Canada. The report presents the findings of interviews with more than forty people (listed in Appendix 1), representing a wide variety of agencies that support SMEs and/or promote information and communication technology (ICT) uptake, and Canadian retailers and professional services providers. The interviews were conducted by the authors in February and March 2011.

Initial data collection took place in Fredericton, New Brunswick, Stratford, Ontario and Parkland County, Alberta. Fredericton and Stratford have been recognized as Intelligent Communities by the Intelligent Community Forum (ICF), and Parkland County is establishing itself as an Intelligent Community according to the ICF's principles.[1] We visited each location, and conducted the interviews in two stages, starting with the agencies that support SMEs and/or promote e-business technologies. We asked the agencies to refer us to SMEs who were using e-business technologies in their communities, and then asked those SMEs we interviewed to refer us to their peers. This "snowball" approach was supplemented with direct approaches to businesses we identified on our travels to Fredericton, Stratford and Parkland County, as well as to some Canada-wide e-tailers. The direct approach method was less successful in generating respondents, so we drew on our professional networks to identify other retailers and professional service providers to include in the study. We are very grateful to all those who took the time to provide their input.

The respondents do not make up a representative sample of Canadian SMEs in the retail and professional services sectors. Given the exploratory nature of this project, our intent was to assemble an interesting group of respondents from various geographic locations and in various industries. The respondents are based in British Columbia, Alberta, Ontario and New Brunswick, and many of them sell their goods and services across Canada and internationally. We spoke with eight retailers. One of these operates a "pure play" e-business, with no physical retail location. Another is primarily an e-business, but also operates a retail store (the store is co-located with the distribution centre for the e-business operations). Four of the retailers currently do not sell goods online, but two of them are likely to do so in the near future.

Several of the professional services providers offer information-technology based solutions. They were able to provide insights on their own use of e-business technologies, as well as offering observations on their experiences in supplying these technologies to SMEs. These companies offer professional services to the insurance industry and the healthcare sector, provide consulting services and technology solutions, host and design websites and develop customized high-end software solutions to support logistics across a variety of industries. We also spoke with an insurance broker, a financial planner, an accounting services provider, an engineering firm, a marketing company and a public relations company. Several of these

[1] http://www.intelligentcommunity.org/index.php?submenu=AboutUs&src=gendocs&link=AboutUs

companies accept online payments from their customers, but generally their use of e-business technologies does not involve online transactions.

All of the SMEs we interviewed use some form of e-business technologies. These companies have thought carefully about how to take up e-business technologies to support their business objectives and are confident of the value of their technology investments. They have a clear understanding of the strategic importance of technology in their businesses, and make informed decisions about how and when to invest. Many business owners started our conversations with statements that "we don't buy or sell goods online" (just five of those we interviewed currently support online transactions) but then proceeded to outline a myriad of ways in which their businesses are benefitting from adopting e-business technologies.

The project began with a review of previous research on the benefits and barriers of adopting e-business technologies. Based on our understanding of this literature, we developed questionnaires[2] to explore agency and SME perspectives on current challenges faced in further e-business adoption by Canadian SMEs, and to solicit understanding of its benefits. The respondents provided recommendations to encourage more strategic, informed, effective use of e-business technologies by small and mid-sized Canadian retailers and professional services providers.

The report begins with a discussion of how these Canadian SMEs are using e-business technologies. It then outlines our findings regarding enabling conditions for e-business adoption, discusses drivers of and barriers to adoption, identifies risks of adoption and offers suggestions for reducing risk. We then consider the ways in which SMEs choose and assess e-business solutions. The report concludes with recommendations to encourage e-business uptake among Canadian SMEs and suggestions for further research.

[2] Questionnaires are included as Appendix 2.

2.0 The State of e-Business Adoption by Canadian SMEs

There are few recent studies documenting SME adoption of e-business technologies in Canada. Statistic Canada's Survey of Electronic Commerce Technologies (SECT) was discontinued in 2007. At that time, only 41% of Canadian private sector businesses had a website, 8% sold goods or services online and 48% purchased goods or services.[3] 2005 data indicated that more than 50% of businesses felt that their goods or services were not suited for Internet transactions, a percentage that was unchanged from 2001.[4] A 2009 survey conducted by the Canadian Chamber of Commerce found that 96% of Canadian small businesses were using the internet for business purposes, 46% could receive online orders and 27% were accepting online payments.[5] The 2011 Québec provincial budget reported that as of 2009, 89% of Québec SMEs had a broadband connection, 65% had a website and 13% could conduct transactions on their websites.[6] In early 2011, Google estimated that as many as 1.2 million Canadian businesses did not have a website.[7]

Initial interviews with agencies suggested that many SMEs are not making good use of e-business technologies. While this may often be the case, we found numerous innovative and effective e-business applications in use by the SMEs with whom we spoke. The Canadian E-Business Opportunities Roundtable defined an e-business as one that "leverages the Internet for providing or sharing information, or for delivering services, and/or realizes some or all of its revenues from Internet-based transactions and/or the manufacture and/or sale of Internet-related products or services."[8] Our data illustrate the varying levels of e-business deployment among the Canadian SMEs we interviewed. For many of our respondents, e-business is central to their operations, as these quotes reveal.[9]

> *- "We do almost all of our business over the internet. We communicate with our clients, we sign contracts, we submit documents, we receive documents. We do, I would say, a high percentage of our business electronically."*

> *- "I don't think we'd be able to grow if we didn't adopt these types of technologies. These technologies allow us to be able to have more than one office and share all that information across those offices, have all our information available to us at our fingertips, whereas before, you know, it was paper, it was records. It was stored in one location and if you had five offices, you had to request it."*

[3] Statistics Canada, 2007
[4] John-Huggins, 2007
[5] The Canadian Chamber of Commerce, 2010
[6] Finances Québec, 2011
[7] Websites are now free for all Canadian businesses, 2011
[8] Boston Consulting Group, Canada, 2000, p. 11.
[9] Quotes throughout the report are from interviews conducted for this project. Some quotes have been edited for readability.

- "We have some clients that I've actually never physically met. One in the US wanted help with voice over IP solutions selection and a call centre. We never went down there. We did everything over teleconference, web conference and shared files back and forth, and we sent them invoices and they paid them with email transfers. So that was many different types of electronics to conduct business. So I think about it [e-business] really not just like a store kind of thing, but using electronic media and circuits and applications to do your business."

All the businesses we interviewed have adopted some e-business technologies. The e-business technologies in use in these Canadian SMEs were identified in our initial literature review (see Appendix 3). This section offers detailed comments on how these technologies are being used by Canadian retailers and professional services providers.

Customer Facing Websites

Taking the use of websites as an example, we found four distinct approaches in engaging with customers or clients.

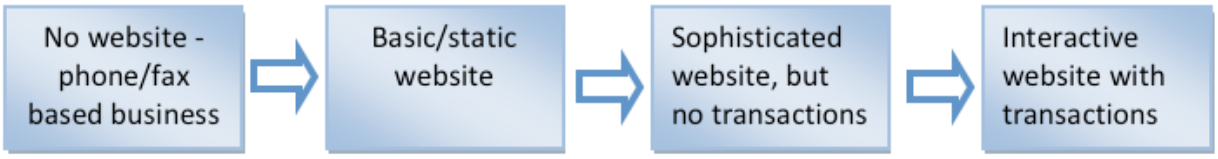

Figure 1: Stages of website development

Most of the businesses aspire to increase the sophistication of their website, but also noted that the purpose of the website is much broader than just engaging with their customers. All but one of the businesses we interviewed had a customer-facing website offering at least basic information on the nature of the business. These websites are not just targeted at customers however, they are also valuable in recruiting staff and provide existing staff with a point of reference and a consistent branding message to refer to when marketing the business. A pharmacy noted that its website is useful for referrals – other professionals (e.g. doctors, physiotherapists, veterinarians) can print off information and provide it to their clients who can then contact the pharmacy directly.

Many retailers' websites provide customers with extensive information on product availability, allowing customers to research products online before making a trip into a physical store. One clothing retailer has developed a customized "virtual closet" application that allows customers to keep track of the clothing they have purchased, making it easier to determine how new purchases will fit into their existing wardrobe. The e-tailers in the study (those who do sell their products online) have websites that enable transactions, allowing for online payment but in some cases also providing alternative options for payment to customers who do not want to use their credit cards online.

Professional services providers also use their websites for branding and marketing. Additionally, they may allow customers to try out their services with web-based demonstrations, and they may also facilitate customer self-service (e.g. through a custom-designed web portal). For instance, customers may make appointments through a service provider website, or find answers to support-related questions. Some service providers transfer information to and from clients using a web interface, and may have customized tools (e.g. a secure messaging system) to allow clients to interact with service professionals. In some instances, customers can input a problem and/or data and a service provider working in any location can take action in real time.

Websites are also used as a platform for community building and interaction among customers, and between businesses and their clientele. Many businesses are experimenting with social media tools and have integrated these into their web presence. This point is discussed below.

Intranets/Business Facing Websites

Most of the businesses in our study use web technologies to support the administrative aspects of their businesses. An advantage of web-based tools is that they can be accessed by employees anywhere they have an internet connection, not just in the office.

Many have internal web portals, frequently designed to their specifications, that support things like employee scheduling (allowing employees to check their schedules online), time tracking and inventory management. One retailer provides training videos to employees through its "back end" website. An engineering firm uses its custom web interface for client management, client tracking, journal entries and data management, through a number of integrated, connected modules. Web tools are used to transfer files, share data and manage documents. They also support logistics and project management.

These portals may also be used to exchange data with other businesses (e.g. insurance brokers transferring client information to an insurance provider). One service provider noted the benefits of providing employees with two computer monitors so they can access their own client information systems and look up other information sources at the same time. The pharmacy we spoke with is able to access customers' lab results from a centralized data source. Businesses are keen to transact with other businesses using the internet, but note that not all of their suppliers are able to do this. They do use the web to respond to business opportunities (e.g. requests for proposals, government tenders.) Faxing and/or paper-based transactions are still prevalent in some industries and required for some government transactions.

Email

SMEs make extensive use of email to communicate with their clients and among employees. Email is seen as an unobtrusive form of communication, allowing clients to respond when it is convenient for them. Signed contracts are sent by email. Mobile email is available on smart phones. Many firms conduct extensive email marketing and customer engagement campaigns, using contact management software to track response rates.

Telephony

Telephony is still important to SMEs. As a clothing retailer says, “if someone calls me and says he needs a blazer, I’ll ship it to him.” Some companies are moving to voice over internet protocol (VoIP) services that allow them much more functionality. For instance, an insurance company’s employees can access their full range of telephone services from anywhere with an internet connection, allowing them to work from home, or to make telephone calls while travelling with the same ease and at the same cost as if they were in the office. Some of the SMEs we spoke with prided themselves on answering the phone with real people, others found efficiencies in well-designed voice mail systems (that can route information to email or other telephone numbers on demand). In both instances, the SMEs had carefully considered their options and selected the one that best suited their needs.

Some SMEs are using Skype for internal communication, making use of the free video conferencing feature as well as making audio calls. Smart phones are a central technology for many service providers. Features like cameras and video allow instant visual information sharing, and can reduce or eliminate the need for travel between work sites. Mobile email access allows for constant contact with the office. Files can be transferred by email, and the web browsing functionality enables information searching while away from the office.

Social Media

SMEs are venturing into social media, often cautiously. LinkedIn is being used as a recruiting tool, and offers potential for networking. A number of business owners are blogging, seeing this as a way of personalizing their websites. Facebook is seen as a good way of creating a conversation among customers, and can be used to answer questions directly or to solicit customer suggestions (e.g. products they would like to buy). For instance, a store selling baby goods found that Facebook is an excellent way to share information with mothers who use Facebook extensively. Some businesses have linked their Facebook and Twitter accounts, using both to provide updates and tips to their customers.

Twitter is seen as “a way to allow customers to interact with the brand.” It allows for relationship building, recognizing that the “best communication is two-way.” Further to this point, Twitter is seen as a great tool for listening. One company noted a service offered by Fredericton’s Radian 6 –

> *- “it allows companies to monitor what is being said about your company, your brand, your competitors, whatever is being said on Twitter, and on other social web sites. You can use it to find out what your customers, competitors are saying about you. It also provides tools that you can – if someone’s asking a question – you can respond to it, if they’re having an issue they don’t know the answer, you can use the tools to engage with them.”*

When used effectively, social media allows companies to listen to and engage with their customers, and to establish themselves as leaders in their lines of business. Social media are

very important in helping retailers and service providers develop and maintain relationships within their local communities.

Cloud Computing/Software as a Service

Many SMEs are aware of, and interested in, cloud computing but it is not yet widely used. The idea of software as a service (SaaS) is also appealing to SMEs. Both of these approaches promise SMEs access to sophisticated services without the need for extensive in-house expertise, and at a much lower cost than if they were to operate these services themselves.

3.0 Findings: Understanding e-Business Adoption by Canadian SMEs

In this section, we present our findings regarding e-business technology adoption by Canadian SMEs. We begin with consideration of the enabling conditions for e-business adoption, then identify the drivers of e-business technology adoption, and outline barriers and risks in technology adoption. We then identify means to reduce barriers and mitigate risks, and conclude with a discussion of how SMEs assess e-business technologies. Where relevant, we preface discussions with a brief review of previous research (a detailed literature review is found in Appendix 3), and then offer the perspectives of agencies and SMEs. As such, we highlight similar and contrasting ideas about e-business adoption, and note where our findings deviate from previous research.

3.1 Enabling conditions for e-business adoption

After in-depth interviews with the agencies and SMEs, we identified three important conditions that can make the business environment of SMEs more conducive to e-business technology adoption. These are the presence of supporting infrastructure and an e-literate population; an environment in which businesses and governments lead by example; and a supportive local business community.

Supporting infrastructure/e-literate population

In the early 2000s, the Canadian e-Business Initiative produced a series of reports aimed at helping Canadian SMEs understand the value of e-business, and encouraging them to adopt e-business technologies. Among their recommendations was the further development of broadband networks in Canada, coupled with a need to communicate the value of broadband infrastructure to Canadians. These reports also noted the need for a technologically literate population.[10] Our recent interviews confirm that good broadband infrastructure and improved technological literacy are still important today, and that Canada should have a digital strategy in place to ensure continued attention to both this issues.

The availability of high quality, reliable broadband service is a concern, as noted by respondents across the country –

> *- "We need better connectivity throughout our clientele region. We are in agriculture, so we have clients who are in locations where they have very poor internet and communication connectivity. So, both broadband and cellular connectivity are important. " (Ontario)*

> *- "Access to broadband is critical. "We have all these fragmented approaches around broadband, we need a strategy, it needs to be bulletproof. In Canada If we can solve communication issues, the social and economic gap we have in the rural and urban issues will be minimized. Without communications, technology is nothing." (Alberta)*

[10] Canadian e-Business Initiative, 2004b

- "Well, connectivity is still a big issue in Canada. Choice, availability, pricing is a big issue. In New Brunswick the Premier says that everybody is connected. That's technically true, but it's not, hmm, it's far from adequate. Speeds are far from adequate. Choice is far from adequate. …Rural Canada is in a real pickle, and even urban Canada is falling way behind." (New Brunswick)

Upload speeds are especially important for businesses that create and transfer large files. An SME operating in downtown Toronto noted that it was not possible to back up files offsite because the company simply could not get a broadband service that offered sufficient upload capacity for its "gigantic" files. Instead, it was forced to rely on physically transferring the files offsite using portable hard drives.

One SME owner also commented on the need for an open internet (i.e. not subject to service restrictions) – "The government needs to keep the internet open, not closed, available to everyone, easy access. That's what the government can do. Working as watchdog."

Some of our interviewees, especially those from companies that provide technological services and capabilities told us that they find it hard to hire people who have a sound technological knowledge base. In their opinion, the lack of an e-literate, well-educated labour force makes their operations difficult, a concern that has persisted for more than a decade. This point is considered further below, in the section on barriers to e-business adoption.

Agency perspective: Most of the agencies we talked to stressed the importance of infrastructure and/or building e-literate populations for enhancing the uptake of e-business technologies. For example, for many years the City of Fredericton has operated e-Novations, a municipal corporation that provides telecommunications infrastructure to local businesses and sponsors the Fred-eZone, a free wireless network in the city. e-Novations has fostered the development of innovative telecommunications services in the city, and encouraged use through the provision of free Wi-Fi. Fredericton is also one of the pilot locations for Bell Aliant's FibreOP fibre-to-the-home broadband service. There is a sense that Fredericton is a community that is well-positioned to host e-businesses, and one in which the citizens are comfortable using technologies. There are more than 100 local businesses with Facebook accounts and a similar number (no doubt with some overlap) using Twitter. 75-80% of the 900 Fredericton Chamber of Commerce members have websites.

Stratford, Ontario has also put efforts into broadband network development, offering a free Wi-Fi network and access to high speed internet services through its municipal broadband network. Parkland County, Alberta has been helping address the problem of poor broadband availability by actively supporting wireless providers to improve their services (e.g. helping them solve problems with network interference), and by building towers for wireless equipment that can be used by any interested broadband providers.

SME perspective: SMEs told us that digitally literate clients can make them take the next step in e-business technology adoption. SMEs expressed a worry about moving ahead of their clients

and leaving behind some of their existing client base. However, SMEs are in the business of helping their clients so as their client base becomes increasingly digitally literate and demands more e-business opportunities, the SMEs will respond.

> *- "For us the barrier is our clientele and their shift to web based information and e-commerce. Technology has to be used by our clientele before we can actually provide it... We look at timing and uptake of technologies by our clients and then it becomes a priority for us and we implement it."*

Statistics Canada data indicate that many Canadians are not yet ready to make online purchases. The 2009 Canadian Internet Use Survey indicated that 39% of Canadians used the Internet to make online purchases. Of these online shoppers, 84% paid for some or all of their purchases online.[11]

> *- "People are afraid to buy online in Canada. …Our biggest challenge once we've engaged a customer is just the fear of, you know, I've never bought online before. How does it work? Will it arrive at my door? Is it okay to give my credit card?"*

Some companies accommodate their clients' varying levels of comfort with and confidence in online transactions by offering alternatives to online payments (e.g. one company reports that it accepts payments by cheque, PayPal and money order, and will take credit card information by phone or fax as well as through their online payment system). Retailers also make it easy for customers to learn about products through their websites or Facebook pages, and then encourage them to make their purchases in person at a physical retail location. Companies also offer telephone support to assist customers make online purchases, mitigating the issue of fear of online purchasing.

Leading by example

Our respondents spoke frequently about leading by example and we find that the view is similar for agencies as well as SMEs. This idea was endorsed by the Canadian e-Business Initiative studies, noting for instance that governments could become "model users" of ICTs in their interactions with citizens.[12]

Agency perspective: Most of the agencies that we interviewed believe that they should set examples in e-business technology adoption. For instance, both the Fredericton Chamber of Commerce and Enterprise Fredericton are using social media to communicate with their stakeholders.

> *- "We view it as a lead by example exercise. We don't want to be a laggard in our own membership in this sort of thing. We want to show people that 'look we're doing this, and*

[11] Statistics Canada, 2010a
[12] Canadian e-Business Initiative, 2004b

you can do it too.' We're a small non-profit organization with a small budget, but yet we make use of technology."

The Fredericton Chamber of Commerce uses a customer relationship management system to track its engagement with members, and recently demonstrated the use of QR codes to encourage participation in an event. It reports much member interest in learning more about these technologies.

SME perspective: SMEs generally understand the need for being up to date with e-business technologies. Some of them talked about using customized software, cloud computing, smartphones and other current technologies extensively. From our interviews with professional service providers, it is evident that many SMEs do understand the benefits of e-business technologies and want to position themselves as leaders in their respective industries in terms of technology use.

- "*We feel we need to stand out more than the other person. We're looking at video communication for the commercial clients. Our sales team is looking at that, not to say we couldn't do it on personal lines too. We like to stay in contact, sometimes the distance is hard. This would be an extra step, to build that relationship for clients."*

- "*Nowadays people expect a certain level of service, consistency in service… Certainly we have some clients that do not own a computer, but to keep up with the X, Y generations, we have to jump on board with new technologies… Our competitors are not doing the same thing."*

Although SMEs understand the importance of leading by example, several respondents outlined frustrating interactions with government agencies that involved paper-based correspondence and document filing. SMEs are keen to use e-business technologies in their interactions with government, but note there is much work to be done in order for government agencies to lead by example.

Supportive local community/peer support

A supportive local community stands out as another important enabling condition for adopting e-business technologies.

Agency perspective: Agencies repeatedly talked about how a positive attitude in the community can create a conducive environment for technology adoption by small businesses. For example, the agencies in Stratford mentioned that the involvement of RBC and the University of Waterloo digital media department in the community has encouraged SMEs to be prepared for future business opportunities provided by e-business technologies.

In Fredericton the easy availability of local technology infrastructure and support at the community level are creating awareness about social media and e-business technologies generally. The Fredericton community supports a regular "Cybersocial," encouraging

networking among local businesses.[13] It is also home to two universities and the National Research Council of Canada's Institute for Information Technology.

In Parkland County, the council has dedicated funds for e-business training workshops, and is supporting business incubators in five communities. It has also offered to provide wireless hotspots and computers in community halls across the county, to improve community engagement and to make it easier for local citizens to interact with their community associations.

SME perspective: SMEs also emphasize the importance of supportive local community. However, in contrast to the agency respondents, most of the SME owners reported to us that they feel that there is a lack of personalized support for small businesses at a community level. We found that SME owners frequently talk with other business owners to get information about what technologies are working for others. Some of the SMEs even mentioned that they consider these connections as their primary source of information about e-technologies.

3.2 Drivers of e-business adoption

Business needs drive technology adoption, not vice versa

We found that the availability of technology does not drive adoption; rather the needs of the businesses play the most important role in this regard. This point was not noted in the review of previous research.

Agency perspective: Agencies who provide support and education for e-business technologies understand that the SMEs may not adopt these technologies just because these are available in the market. The agencies realize that no businesses can be forced to use a particular technology. They understand that business needs drive technology adoption, not vice versa.

> *- "The discourse has to focus on business outcomes, not on technology. So technology as a tool, but then explain. The next step, which is the barrier that you have to break with the SME, is this is what it's going to do to your business. This is how it's going to increase your sales or reduce your costs."*

> *- "We can't force anybody to do it… We will increase the exposure… Constant exposure is a big thing… news stories, press release, training programs, seminars... they have to do it in their own time, at their own pace."*

SME perspective: SMEs noted that they adopt a particular technology when they actually need it. For example, an interviewee from a professional service firm told us that they do not have a website since they do not need it right now. This firm uses smartphones extensively to communicate among the partners and the staff. They also have customized software which allows the customers to provide information in their accounts which can be accessed by the

[13] http://fred-cybersocial.blogspot.com

firm in real time. This firm is not shying away from technology, but only uses those technologies that serve their current needs.

Another professional service provider concurred –

> *- "You have to know what you need, and once you know where you want to go and you know someone that can help you get there, then you can implement the technology in order to assist you in doing what you want to do. But for me, it's always driven by a need. You identify a need and then you identify a technology that can help you make that, do whatever it is that you're trying to do better, more efficiently, faster."*

As noted above, SMEs are also very concerned about moving ahead of their clientele. They base their technology decisions on actual needs, as a comment from a professional services company explained –

> *- "We tried to do paperless billing. We found a reduction in our invoice turnover rate, our accounts receivables grew significantly because they [our customers] weren't opening our invoice from their mailbox and issuing us a cheque. So, it felt like the industry was not ready for that yet. It takes me two hours to fold my month end invoices. And that's such a waste of time when I could just hit a button in my software that says "email" and it's done."*

In some instances, the nature of the service on offer is not perceived to be conducive to an online transaction. For instance, a spa owner noted a preference for face to face interaction, while still supporting online engagement for those who want it –

> *- "We still have seven girls that answer phones and book appointments at the spa. Online booking is not that popular, but for those who like it, it's great. We don't sell our products online at the spa. I feel that if you come in, it's better to have a consultation. You can talk to an aesthetician, or stylist. It's best to pick the products that are best for you."*

Perceived benefits of e-business adoption – productivity, promotion, presence

The literature review identifies financial, strategic and managerial benefits to SMEs when they adopt e-business technologies. Our interviewees describe these benefits slightly differently, in terms of productivity (including efficiencies and convenience), promotion and presence. Our respondents did not discuss all the benefits identified in the literature, but we have no reason to believe that the benefits not discussed are not achievable.

Agency perspective: Agency respondents consider perceived benefits of e-business technologies as important drivers of adoption. They repeatedly mentioned the benefits of increased productivity and revenues for business, global exposure, effective promotion through online presence and the potential to differentiate a business from competitors through new ideas.

- "E-business adoption will change the productivity level and we will be able to compete globally which we are not ready for now…. Ideas also come out of this, more creativity, potential of doing things differently whether the administrative side of it, or HR, marketing or distribution channels. Also sales…they will be better positioned to enhance their sales."

Agencies did note that many SMEs with whom they work lack knowledge about the benefits of adopting e-business technologies. For instance, one agency noted that the "biggest stumbling block is small business not realizing the payoff [of e-business adoption]."

SME perspective: SMEs were less likely to use the term productivity in defining benefits, referring instead to efficiencies, and to increased convenience for clients and for employees. Efficiencies include improved business processes (e.g. removing steps or speeding up processes) and reduced transaction costs (including savings on printing, postage and telephone calls). "Back end" e-business systems and mobile connectivity allow employees access to information wherever they are, often allowing for quicker response times. Features like online schedules offer convenience to employees. Additionally, customers are better informed about the company's products or services when they initiate contact, making the sales and marketing process more efficient. As two retailers observed –

- "Our initial vision wasn't to sell products on the internet, but to give an intelligent internet presence that can be used by clients and our team to help make their lives easier, and to answer questions. And in the world of smart phones and internet technology, it's important to maintain your presence and keep pushing forward to develop technologies to make it easier for your consumers and employees to interact with your storefront presence."

- "A lot of customers email the store first and then order online. A lot of people will post a question before they come in. Do you have this in stock, what's the measurement, size etc. It saves some time. They ask a couple of quick questions, and when they show up we have the product ready for them."

This "window-shopping" behaviour is noted in Statistics Canada's *Canadian Internet Use Survey*,[14] with 52% of Canadians going online in 2009 to learn more about products before making a purchase. 69% of these window shoppers then purchased something directly (not online) from a retailer.

E-business technologies allow a customer to engage with a supplier at the customer's convenience. If a customer wants to book an appointment in the middle of the night, he or she can do that though an online booking system. Likewise, if clients needs to respond to a query from a professional services provider, they can do this online according to their own schedules.

[14] Statistics Canada, 2010a

- "It's easier and more convenient for them…you know when they have the time to give our questions some attention. So, it's really for their convenience…I know that if somebody just happens to stop into my office and they demand 45 minutes of my time, it is extremely inconvenient…That's why I think it's just respectful. I appreciate being given the opportunity to answer questions at a more convenient time for me. And I also think that having e-business gives entrepreneurs the opportunity to better multitask."

Purchasing online is convenient too because it offers home delivery –

- "Originally when we started, the theory was that we would do very well in rural areas, but actually, more of our business happens in downtown urban areas. Our biggest postal code is actually in downtown Toronto, and the reason is because a big part of the value proposition for us, we're discovering from our customers, is just the convenience aspect. So the idea that I work in an office, I have kids to get in the car and drive to wherever the store is – that takes a lot of work. I'd rather just have it delivered to my house. We're seeing that profile fits a lot with the downtown Toronto kind of mentality."

Several respondents are developing mobile applications for their customers to use to engage with their websites. For most SMEs, mobile access to their sites is a future consideration rather than an immediate priority, but it is definitely an issue of which many SMEs are aware.

Service providers can easily disseminate information online, in a targeted fashion. For instance, an insurance broker noted –

- "We're looking at doing little videos on timely tips, looking at sending those out to our clients. We could send out a short little video from our president, for example about what clients should do in the spring. We can target the ones that would be in a flood prone area, for example. That can help avert a claim."

This example illustrates an indirect promotion tactic, reminding clients of their relationship with their insurance broker. Customer relationship management tools are very popular for email campaigns. They are easy to use, provide excellent tracking (e.g. did the customer open the email? did he or she respond to the offer?), and are very affordable.

Additionally, many SMEs note the vast potential of e-business technologies to promote their businesses, and to extend their customer base (thus increasing sales). E-tailers sell to customers across Canada, and internationally.

- "If we only had a retail store, you could draw a circle with a 10 mile radius and that's where our customers would be. The reach is much further with an online business. But this only works if you have a niche product, demand."

"If you're a small business you can make yourself look bigger than you actually are through your website. If you're product-based it is an effective tool to do sales and marketing more cost effectively than other traditional means, like direct marketing."

3.3 Barriers to e-business adoption

Various barriers to e-business technology adoption were noted in the interviews. The themes identified are similar to those that appear in the literature. Some barriers are more important than others, and there are differences of opinion between the agencies and SMEs in some respects.

Costs

Previous research indicated that costs and financial barriers are strong constraints for e-business adoption. While our respondents noted the importance of containing costs and making intelligent investment decisions, the costs of e-business technologies are generally seen to be manageable. This may reflect the fact that the costs of e-business technologies have declined over time, and basic solutions are becoming much easier to implement.

Agency perspective: Agencies are divided in their opinion about costs. Some agency respondents told us that the cost of e-business technologies is not that high now since the prices of software and other components are declining. In contrast, some agencies, mostly grass-root level technology groups, underlined the high cost of adopting e-business technologies due to the need to outsource the knowledge. The technology service providers we interviewed noted that most SMEs cannot afford their services.

SME perspective: SMEs are very aware of the costs of adopting the technologies they use. Their approaches to cost-benefit analysis and use of metrics are discussed below, but it is clear that SMEs invest in e-business technologies only after careful consideration of costs. This is not to say that all costs are justified; we heard many stories of investments that did not pay off as expected. Some SMEs are willing to do e-business if the clients are ready to do it, adopting a philosophy that if there is a benefit, it is worth the cost. "We decide what we need and find the money to make it happen" was a sentiment expressed frequently by SMEs.

Table 2 (in Appendix 3) provides cost estimates for establishing a web presence. Most respondents did not share the costs of establishing their online presence with us. Some have a very basic web presence that would be consistent with the low end estimate in the table, others have invested heavily in custom software to provide specialized services and offer a unique online experience to their clients. However, customized approaches are not always successful. A retailer noted an expensive error in web design –

- "we used flashy, very expensive, flashy websites that were not friendly to optimization spiders. So it was very costly. It looked wonderful, it was glitzy and sparkly but it did not do very much for us, so that was a challenge."

Some SMEs commented that using social media tools like Facebook and Twitter incurs no cost, and they can be"a catalyst and an equalizer." "On the social networking side, by and large, you don't have to invest in anything. You just need to be where the consumers are. So if you've got time, you can really get in that game of low investment." One retailer said "It blows my mind what I can do online with Facebook, for free."

Another disagreed, saying "It's not free. I think people have this perception that it's free and it's certainly not free to do well." Those who are relying on social media tools to create an engaging, sophisticated online interactive experience for their customers can spend many thousands of dollars to deliver a positive experience. There are costs for the in-house or contract staff time necessary to "populate" these tools with compelling content. The content must be authentic, and appropriately targeted to the client base. A public relations firm noted that companies that try to hire someone external to blog or tweet on their behalf rarely succeed. Social media requires a clear strategy to be used effectively, as this service provider explained –

> *- "If you don't have a strategy, you're just spinning your wheels. Sure, anybody can tweet. I can go to the corner of Queen and Dufferin [in Toronto] and I can just talk and stand on a soapbox. It doesn't mean anyone is going to listen to me. Just the exercise of doing it, in and of itself is not meaningful. If it's not strategic, then it's a waste."*

SMEs also noted the costs of software. For example, one financial service provider told us that it cannot afford any specialized software and thus has to use general products available in the market. The company changed its business activities to adhere to the operational rules of the software but was not very happy about being forced into this change.

On a related note, a technology provider admitted that the company had made a mistake in purchasing a particular customer relationship management tool. The company thought the tool would be appropriate for use by its sales staff, but discovered after installing it that it was too complex. As a result, the company abandoned the tool and developed its own in-house solution. Unfortunately, the company is still locked into a two-year contract for this product.

Finally, Canadian companies face barriers their international competitors do not. For example, it is noted that the cost of shipping goods in Canada is high. As one e-tailer commented, shipping "takes longer and costs more money than our US partners." Another important point is that there are fewer investors in Canada than in the US interested in or willing to fund electronic businesses.

Technology barriers

In addition to the problem of e-business technologies being too big and too complicated for SME use, another serious concern is that much of the software to support e-business is designed in the United States, and it does not support the Canadian business environment. Two quotes illustrate this point –

- "Our website was designed and hosted in the States. When we did our ecommerce to go on it we had to go through Canada – getting the two things to marry up was a bit of a struggle."

- "The biggest challenge for Canadian retailers is software is developed in the US. The brains behind the software development are in the US. They don't understand about Canada, and the complexity of our tax structure is a hindrance for choosing software. Whatever software you need, the majority of software can't do Canadian taxation."

Another respondent noted that QuickBooks accounting software offers web access to its US-based customers, but not to its Canadian ones, a frustrating limitation. Because off the shelf software from the United States doesn't always suit the needs of Canadian companies doing online transactions, many companies develop their own software. While this has the advantage of being customized to their operations, it can be expensive and difficult if the company does not have the proper expertise.

Not all technologies deliver expected results. Search engine optimization (SEO) and online advertising are cases in point. Some retailers are very confident that they have mastered search engine optimization, and can point to clear results as a result of investment in this area. One retailer noted –

- "We lead our industry in SEO, absolutely. We dominate, I think we're number one just in our industry, number one on just about every page for all the key words, and that's taken a long time to develop and we had to seek out the people with the knowledge. Now, it was difficult. It was challenging."

Others are more sceptical of SEO and online advertising. One retailer commented that "people tell you it's good for you, but you don't really know. There's no proof." With the assistance of a respected consultant, the same person carefully planned an advertising campaign using Google Ad words. He was confident that he had a good product on offer, and anticipated an effective campaign. After two weeks, and thousands of click-throughs, he had spent $2,500 but had made no sales. His conclusion was that despite expert advice, it is very difficult to craft an effective online sales campaign. Other SMEs offered similar opinions, suggesting that both SEO and online advertising have not worked for their businesses.

Software is not a barrier to all the SMEs we interviewed however. Many of the larger companies do have the capacity to develop their own software, customizing it to meet their specific needs.

- "What we found is that the net cost of writing software yourself is actually lower, even though sometimes it looks like it's more in the beginning … the knowledge that you gain in that process, and the ability to specifically create competitive products, so something that no one else could buy, is important if you want to win in a category. The other advantage for us is that by writing our own software specifically we are able to

optimize the software for our processes instead of having to modify our processes to existing software. We've just had an incredible amount of net savings because of that."

SME education and skill sets

Previously we noted that some clients are not well-prepared to adopt e-business technologies. The same is true of some SMEs. The business owners we spoke with are experts in their fields, and run successful businesses. These characteristics do not guarantee expertise with e-business technologies however. Most of the individuals we interviewed had some affinity for technology, and understand the potential benefits it can bring to their operations. Many recognize their limitations as technologists and seek outside help to turn their ideas into viable electronic business opportunities. Those service providers who offer technological solutions noted the challenges they face in convincing non-technical business owners to consider adopting e-business technologies.

- "I think the first challenge is just letting people know that that kind of technology even exists. People have their way of doing things and running their business and they just may not even consider it, but meanwhile, it can make their lives a lot easier."

- "It's difficult to get across the value of e-business. With a smaller company you'll be dealing with potentially less robust management than you would at a larger company where they've grown because they have certain trades and skill sets that allow them to grow, including good management practices in general, they're willing to adapt and do whatever it takes to grow. A lot of it with these smaller companies is potentially that the owners are the managers as well, and potentially an older age category, so that they're less apt to adopt technology, which is another key problem."

- "When you have companies that tend to not be technologically advanced, the general challenge they have is if leadership can see the value. I think if you can demonstrate the value, then most business owners get it, and want to move there."

- "One thing companies struggle with is that there are many different aspects and considerations to think about in their technology decisions. They have to think about the immediate use they'd make of it, they have to worry about security and maintainability. Most of them don't have the skill sets in house to implement or maintain these technologies. They need to rely on consultants or buy off the shelf solutions to maintain them. Complexity is one thing they struggle with. They prefer simpler solutions."

- "Too often we take a business perspective that IT is merely a cost center. That's completely the wrong way to look at it. IT is an enablement engine. Some companies are not educated to understand that if you want to grow, and you want to expand you're not going to get there without some form of technology."

- "Businesses are not weathered to understand that everything is wrapped in technology. The biggest barrier is that people don't believe there's a different way."

It is noted that many of the larger companies among those we interviewed have built their businesses on information technology, and do have the expertise necessary to deploy e-business technologies. Indeed, several of them develop their own software (as noted above) and offer consulting services to other companies (large and small) regarding the development of e-business solutions.

> *- "I think we're very capable in terms of building solutions that have an e-business component. We have strong architects. We have solid, very strong technologists and we have very good project managers and technical people and what have you."*

Many SMEs do business with other SMEs, that is SMEs supply SMEs. As a result, the problem of SMEs not adopting e-business is compounded when a company that is using e-business technologies cannot use these tools to interact with its suppliers.

> *- "Another barrier is that many of my suppliers are not computer-oriented. While they have computers to run their businesses, sending orders electronically is cumbersome, it's a lot of work and they're not going to do it."*

Another interesting observation is that SMEs who do not fully understand the value of e-business technologies are not well-equipped to sell them to other SMEs. A technology solutions provider observed that "the SME channels don't necessarily know or understand what these technologies can really do to help their SME customers." This solutions provider gave an example of how it was able to help a local construction company understand the value of smartphones in enabling business productivity. This construction company had –

> *- "supervisors and specialists driving back and forth between sites because they've got a simple problem they have to solve but they have to see it. And I said, tell me what cell phones you have, and they had video enabled, picture enabled. I said, you know you could take a picture of that, pretty good resolution, you could send that to the guy at the other site. He could zoom it up and see it on his phone and he probably doesn't have to drive. And he [company owner] went, well, why didn't [the phone store] tell me that? They kept telling me I had to get these smartphones but they didn't tell me what it would mean for me. Well, we did a little paper napkin thing. He equipped not only just his supervisors, but we built a prototype for his trucks which are now mobile offices and he's increased his business tremendously because he's gained back about 2.5-3 hours per day per specialist. So they'll be able to build a lot more houses."*

Lack of skilled labour, access to trusted advisors and consultants

Agency perspective: We found some differences of opinion among agencies as to whether there are sufficient numbers of trained specialists who can help SMEs assess e-business opportunities and then implement the technologies. There is a concern that "there are no real brokers, someone that understands the needs of the company and is aware of the technologies that are available for that company." Even where skilled brokers exist, there is a big challenge in

connecting those with the appropriate skills with the SMEs who could use their assistance. It is also noted that IT projects often have high failure rates, potentially scaring off SMEs who might benefit from investments in IT. Additionally, the cost of skilled labor is not insignificant, and many SMEs do not have dedicated IT staff.

> *- "They don't know what they don't know, also, and what they can do to change their business using IT. That's the biggest gap. If you're a larger firm, you will have resources available that will tell you how to do that and will spot opportunities for you or have conversations with the CEO and that kind of thing. In a small firm, it all sounds a little nebulous. You don't want to trust a vendor to give you the straight goods, and you're so busy running your company day to day that you don't have the time or the wherewithal to embark on a sort of an open ended project of what can I do to improve my company."*

SME perspective: There are some regional differences in the ICT labour market. The professional services providers located in New Brunswick reported an acute shortage of skilled technologists who can help them develop their technological solutions. Web designers are easier to come by, but SMEs need to take care that the provider they choose can deliver what they need. There are many people who purport to be social media experts, but it is difficult to get it right, and risky to do it poorly. However, some SMEs noted that hiring good IT experts is no different than any other hiring or procurement decision. If due diligence is exercised, a positive outcome should be expected. Most of the SMEs told us that they have frequent conversations with other businesses in their industry and local community to learn more about what to look for in IT staff or consultants as they are confident in the information they get from these sources.

Red tape and bureaucracy

Non-technical barriers can create problems for companies that are trying to become more efficient and extend their markets by using e-business technologies. Canadian businesses that are shipping goods to the United States or receiving supplies from the US must deal with trans-border shipping issues. Sending goods across the border in either direction is difficult, expensive and subject to delays.

Canadian interprovincial taxation rules and interprovincial trade barriers also pose challenges for SMEs. One retailer noted that his Ontario-based business cannot sell contact lenses in Ontario, but a competitor based in BC can ship contact lenses to customers in Ontario. Different tax rates across the country complicate billing processes, and add expense to software development. Municipal zoning can also be an issue, with restrictions on operating as a retailer and a distributor from the same location. This is a concern for e-businesses that operate a combined store and warehouse/distribution centre.

Some government tenders have geographic restrictions. For instance a New Brunswick company observed that "tenders may exclude companies from the Atlantic provinces." The same company noted that a firm can "just about go broke responding to an opportunity, in terms of paperwork, hoops that you have to jump through – it's unbelievable, mind boggling how wasteful the process is."

Lack of time

Agency perspective: All agency respondents agreed that time management is a challenge for SMEs. Faced with the day to day urgency of running their businesses, it is hard for SME owners to devote attention to learning about, or implementing new technologies.

> *- "They're often in their stores serving their customers, running their business, so some of the things like 'hmm, how do I invest in an ecommerce portal' sort of fall by the wayside."*

SME perspective: There is no doubt that SME managers are pressed for time. (Indeed, this was a challenge in conducting the research as we were asking respondents to take time away from their businesses to provide input into this study.) Implementing IT solutions takes considerable time and that time may be better utilized by serving more clients. Many smaller SMEs do not have full-time IT personnel and therefore, management/owners are called upon to develop strategies and make decisions.

A respondent from a professional service company told us that he spends a great deal of time asking for help from outsourcing companies for even very small issues and that is a concern for him. One respondent indicated that his company had a redesigned website ready to go for a year before it was actually launched. The delay was not in designing the site, but in finding management time to review it and ensure that it met strategic objectives. (The launch finally took place after the company hired someone with specific responsibility for this task.) Another service provider also noted the same problem, saying "when you have a very full practice of actual work to do, it's hard to find the time to focus on that website development."

Additionally, there is a belief that some Canadian SMEs are owned by an older demographic who may be uncomfortable with new technologies. Therefore, if there is no one younger or more knowledgeable (e.g. son, daughter, trusted younger employee) available to help them in this respect they may not take the time to look into e-business opportunities and potential benefits.

Resistance to growth

It is generally assumed that businesses want to grow, and that they will adopt e-business technologies as a means of supporting that growth. Respondents offered evidence that e-business technologies are beneficial in enabling business expansion, but also noted the fact that some businesses are not interested in growth. A technology solutions provider addressed this point:

> *- "We acquire about 200-300 new customers here a month and you won't believe the number of people that are really happy with the business just the way it is. I think that is something that the government is frustrated over, maybe, not everybody wants to grow and be rich. Myself included, you know, I'm happy running a 60 man organization. I don't want to run a 500 man organization. I'm happy with my business the way it is, you know, not everybody wants to grow just for the sake of growing."*

In some instances, a business owner is nearing retirement and winding down the business. In other instances, the owner is simply happy with the volume of business that he or she is doing. In this latter case, an owner may adopt e-business technologies to improve the productivity of the business, but not as a means of generating new business. For instance, a web design company gave the example of a client in the construction industry who was able to save costs and better serve clients by sharing information through a website. The purpose of the website was not to generate new business.

3.4 Perceived risks of e-business adoption

There are many perceived risks regarding the implementation of e-business technologies. Our respondents focused less on the security, performance and cost risks identified in the literature, and instead highlighted the risks of being left behind by not adopting these technologies.

Agency and SME perspective: In general, SMEs understand the risks and believe that they can be mitigated effectively. Agencies noted that the *perception* of risk creates a barrier for SMEs not currently using e-business technologies. Agency respondents suggested that security issues are the biggest risk factor. We heard less about the security issues from the SME owners. In general, they are confident about their security solutions, noting that security is well-understood and easily implemented (while acknowledging the importance of securing customer data and preserving confidentiality). Some government agencies are themselves cautious about e-government services and expect the SMEs to be the same. The fear of unknown and the possibility of acting too fast are other risks highlighted by the agencies.

SMEs identified risks of non-adoption, competition, and change, and noted reputational and time-management risks in adopting social media. The risk of non-adoption is becoming more significant as e-business technologies become more firmly entrenched in the business landscape.

> *- "Every month that goes by it becomes more important, that's not going to stop. The less you know the more disadvantaged and riskier it is to run a business in 2011. I can see that happen in our industry, and in all sorts of industries. Business is becoming more and more dependent, in every way, on a good understanding and the ability to apply practical solutions in that [e-business] space. So it's very very important, no question about it."*

> *- "As a business owner, you could be quickly left behind if you don't keep up with latest technologies."*

> *- "If you're not making use of it [e-business], there's a risk of limiting yourself to the local market, the Canadian market."*

> *- "I think that's the biggest risk, not capitalizing on the existing technologies, even off the shelf technologies to utilize the Internet. Certainly, lead generation is gigantic. Having a website that gets to the end user and accurately depicts your business, its products, its*

services, its offering, its reputation, is a very, very critical part of doing business today and if you don't understand it, that is a gigantic risk to your long term viability and sustainability. That's a huge risk, no question about it. And things have really changed in the last ten years, even in the last five years."

- "The customer is there so the business must be there to get the customer, influence the customer, touch the customer in some way."

Adopting e-business technologies allows companies to grow, and establish a strong market presence. By doing so, they can reduce the risk of new market entrants encroaching on their businesses. This is a particular concern of pure play e-tailers who are very aware of the strong US competitors eager to set up shop in Canada.

- "Part of the biggest risk is the threat of US retailers coming into Canada and squashing competitors. …When large ecommerce companies from the US deploy in Canada and keep all of their staff except for their shipping staff in the US, the fear is that not only are the profits going to the US, but so are the good jobs."

Another risk identified by SMEs is the impact of change brought about by adopting new technologies. This quote is from the founder of a professional services company –

- "The biggest risk is change… there are a lot of businesses out there that still use pen and paper, and do their B2B transactions via fax. Any new technology requires significant change. People always underestimate the impact that change has on their organizations. … We try to help them with that, organizations that don't get it are at much higher risk of failure. That's the biggest single risk of all projects."

SMEs noted that the social media world can be risky, and approach it with caution. There is a fear that those not using social media are "missing the boat," but this is tempered with the recognition that there is risk in getting it wrong. There is a need for strong policies and guidelines to manage online reputations and protect business integrity. It is also noted that organizations can "overspend" their time on social media, at the expense of doing other things with a higher return.

3.5 Methods to reduce barriers and mitigate risks

Education, peer support and incentives to adopt e-business technologies were identified as methods to tackle the risks and barriers to e-business adoption outlined above. Interviewees did not offer solutions for all the challenges they identified. We explore these issues further in the Recommendations section that follows.

Education – individualized training and case study based approach

Agency perspective: Agency respondents reported that SMEs lack knowledge about basic business activities and how these activities may be affected by technology adoption. There is also a lack of knowledge regarding effective communication with customers through emails

(e.g. using CRM). Agency representatives pointed out that confusion about the benefits, costs and risks of adopting e-business technologies all relate to a lack of proper education. Agencies noted the need for educating SME owners about how to export their products. They emphasized the roles of seminars and case study based training sessions, and noted the value in local partnerships with libraries, universities and community hubs. Agencies already offer a wide range of educational programs and are keen to offer more. However, SMEs reported that information provision by a multitude of players can result in fragmentation and confusion.

According to agency respondents, vendors also have a role to play in educating SMEs about e-business technologies.

> - *"One of the organizations that I'm involved in is the New Brunswick IT Council. One thing that we're thinking about doing is educating non-IT businesses about what IT can do for them, with real life examples of how it's been used in various industries, and benefits that are provided to companies that have implemented them. Individual companies are obviously trying to put the sales pitch on why a company should buy from them, but sometimes that's perceived to be a little self serving. We think if we more broadly educate businesses on how technology can help them they'll generate more of a pull through. And also, if you see someone else in your industry or in a related industry doing something, you can often relate to it better than a solution that's been used in a completely different business."*

There is some mistrust between the ICT industry and the business community. ITAC noted the importance of encouraging vendors to bring their solutions "down market," meaning offering services at a scale that is appropriate to small and medium business. Bell Aliant offers an example of this in New Brunswick, providing flexible hosted solutions priced on a per user basis. It is suggested that SMEs have tended to operate at one of two extremes, either with very basic, often outdated technology, or with over-provisioned solutions that provide far more capacity than is needed. The ICT sector must be encouraged to develop appropriate solutions for SMEs.

> *"Things get rolled out first to government and banks and that kind of thing, and eventually they have to be modularized and simplified and 'cookie cuttered' to work with SMEs. We see most if not all of the big firms doing that. …Our own industry has to continue to learn and evolve about how it speaks to SMEs and how it deals with SMEs."*

> - *"I think that the vendor community has a role to play in serving this constituency. And talk about an untapped market. A lot of these vendor communities, they tend to go for the top tier organizations, but there are layers adjacent to that top tier where it's ripe for business, you know."*

SME perspective: SME respondents also noted the need for education about e-business technologies, but many suggested that they wouldn't attend courses unless they were very clearly targeted to specific needs. This paradox is identified by a retailer who states "There isn't

enough information out there, but I don't know that there's an appetite for it." He expressed his frustration in the following quote –

> *"I don't have the time to go to the seminars. I was banging my head against the wall looking for information. I went to dozens and dozens of them, all of them were a waste of time. A lot of it is such a waste of time, finding out who has that information, is one thing. … I hate to tell you how many days of work I lost on seminars that had zero value, zero."*

A service provider noted that "people who 'get it' will find those sources," suggesting that people will seek out well-designed training when necessary. The challenges are described by a professional services provider.

> *- "Part of me says yes, we should give more education, but then the people must be willing to spend the time to come to the education. Or maybe we should hire people who have the knowledge of these systems and install them into these companies. That way we don't have to train the people there, just bring someone in. But there has to be a willingness to pay for that new talent to come in. At the end of the day, I don't see an easy solution."*

SMEs emphasized the need for focused case studies.

> *- "A really great case study in layman terms would go a long way. Once someone sees the value of one solution over another they can clearly understand – too often the documents are addressed to larger organizations. Smaller organizations need it put into terms they can understand, it all comes down to money."*

> *- "You need to look at the differences between small and medium to large organizations, they can't be addressed with the same paintbrush. The conversation must be different for small organizations. The variances between companies are so great."*

Peer support

Agency and SME perspective: "Peer support" and peer-to-peer information sharing are methods that both agencies and SMEs consider effective in reducing e-business barriers. Agencies view peer-to-peer connectivity as an important tool to let people know about the available technologies. SMEs talk about how other similar businesses provide information and knowledge about practical experiences with a particular technology. They frequently check with their peers before deciding about investing in a new technology. SMEs do not limit their information search within the local community. Their peer groups also include professional service providers/advisers who connect them to other experts, as well as other firms within their industry. Several respondents offered their thoughts on the value of peer-centric networking.

- "*We go to our accounting firm. We do reach out to the contacts nationally or internationally who are doing similar businesses…our accounting firm has a range of different skill sets, training options and contacts."*

- "*Once I find something, I network with other like-minded businesses to find out if they have used the tip or trick that I have learned."*

- *"We do this thing called E-commerce Camp. What we do is we actually rent out an entire bar in Toronto every couple of months and we invite all the top execs from all the ecommerce companies, but also there are junior people, too, and it's free. So you just come and we have a talk. So it would be about merchandising and that sort of thing. …The idea is it doesn't cost money. It's community oriented and we bring people from the community to talk."*

- *"Businesses, people are always quite fascinated by what their peers are doing. Even talking about social networks, social media, this is a very peer-to-peer era. Even just getting the sense out there, among the target community that some of the companies that are doing the best are the ones that are leading the way in the adoption of these technologies, that that could be a useful insight for a lot of people. There is the potential for this kind of raising awareness of what others are doing. There's probably a sense of best practices, that flows from that. So what are the leaders doing? The leaders are doing this, so what are the best ways to do this? How can we make it easier for people to jump in and take part and use these sorts of tools and build these sorts of skills in their organizations?"*

Incentives

Agency and SME perspective: Some agencies and SMEs are aware of a European voucher system that supports targeted research to address SME business challenges[15] and think that a similar system might be developed in Canada. There is mixed opinion on the effectiveness of financial incentives, with some people expressing concern that businesses will only implement technologies if they are given incentives to do so. Others noted the potential for the extension of programs like IRAP or SR&ED beyond the innovation stage to support actual deployment and use of e-business technologies.

3.5 Choosing e-business solutions

Our interviews revealed that SMEs do not always undertake formal analysis when they make decisions to adopt a particular technology. This finding is consistent with earlier studies mentioned in the literature review section. SMEs providing professional services and working in the technology sector do offer specific tools to their clients to enable cost-benefit analysis ("we will guide them toward identifying very early in the process what are the benefits that they expect to see from implementation of these systems, and to be able to measure the success, post implementation"), but in other cases the process is less formal. Business owners often

[15] Olausson, 2010.

come up with ideas about technology, research them in relevant trade publications, seek information online, and connect to other similar businesses to learn about their experiences.

Agencies noted that most SMEs with whom they work (typically smaller businesses) do not have dedicated IT staff or budget allocated to seeking out and assessing new technologies. Spending time assessing options is important however, as this service provider noted –

> *- "Generally businesses probably need to realize that they should be spending 10 - 15% of their time on sharpening the axe, as it were, as opposed to just going through, losing sight of the forest because you're always cutting the trees. If you're spending 10-15% of your time looking for better ways to be doing things on a continuous basis, a lot of businesses would be surprised at the value that generates. The natural tendency is, in a competitive situation, cut costs so there's not much slack in the organization. No one has time to look at what out's there.*

In terms of assessing the benefits of specific systems, it is difficult for most SMEs to identify how technology adoption is helping their bottom line figures. Efficient internal communication and reduced paper use were mentioned as benefits of using automated back office systems but no formal analysis was reported regarding the effectiveness of these technologies. Some professional services companies talked about the importance of cellular connectivity to their businesses and noted efforts to enhance efficiency through use of smart phones. A telecommunication services provider noted that it is generally very easy to establish a business case for investment in e-business technologies, but suggested that vendors don't always know how to help SMEs find the value in such investments.

> *- "Everybody says that they don't want to spend money. I think it's more that the industry doesn't know how to talk to the small business leader in their words to help them understand the ROI and what it really means. Everyone I've ever met – even the ones that are very frugal and sort of more micro part-time businesses – when I talk to them about what they do and what their business is and I give them some examples of what they could do, they go wow. I can convince them. Even the quote poorest ones, I can usually find a very compelling ROI for just about any technology investment.*

One online retailer does track all changes to its website, noting that "we want to make sure that any change that we do, we can see a noticeable and measurable change before we invest in it more heavily." Others noted that not all benefits are easily quantifiable, suggesting that businesses must be able to account for "soft" benefits (e.g. improved processes, happier clients or staff, increased brand awareness) as well as easily measured cost savings.

> *- "We are looking for awareness, impacts on attitudes and behaviours rather than pure financial returns – valuation is about the intangible relationship between reputation and sales."*

"Companies are struggling to come up with the business case. Some technologies would be justified not just in cost saving, but in allowing you to get at new revenue opportunities, or the business case is going to need more factors brought into it to show positive ROI. If you've got a limited understanding of all the benefits that a particular technology choice can give, you may not think that there's an attractive business case."

"The cost of hardware, cost of software, training, these are tangible, identifiable costs, that easily add to the bottom line. But the cost of the change of the work flow, how do you value this?"

One area where is proving easy to track return on investment is social media. It offers measurable tools, in easily understood formats. For instance, SMEs can track the number of hits on a website, and look at the location of these visitors to see whether a specific campaign had an impact (e.g. presence at a trade show, email marketing effort). It is possible to measure the cost per contact, and easy to determine whether someone has opened an email message and clicked through on an embedded link. As one retailer said, "it's really easy to track, you can do links right in the email, if they open them, which ones. It's fantastic, I can go back a month later and track last month's email, track it and see what works, didn't work and all that." Conversion rates from website visits to sales can be calculated.

3.6 Observations on Interview Data

The five sections above outline the central findings from interviews with agencies and SMEs. In this final section, we reiterate four issues that were raised in these interviews.

The perspectives of agencies and SMEs with whom we spoke were sometimes different. This is likely a reflection of the differences between SMEs that are using e-business technologies, and those that are somewhat hesitant to adopt them. Although we tried to include some SMEs that were not making extensive use of e-business technologies, they were reluctant to participate in the study. The SMEs we did interview were generally knowledgeable about the e-business technologies they chose to deploy, confident in their technology choices and very cognizant of the benefits and risks involved. This was particularly true of larger companies in the study. The agency perspective often offered a more cautious stance, and may be more reflective of SMEs that have not yet adopted e-business technologies. Agencies interact with SMEs that are considering e-business adoption, and their perspective may provide a proxy understanding of the concerns of non-adopters or those who are just beginning to take up these technologies.

The initial description of customer facing websites (see p. 4) suggests that companies progress from no website to a simple informational website, with the end goal being a website that will support online transactions. A transactional website is also seen as a way for a company to expand its geographic reach, by offering products or services to customers in any location. Interview data suggested that not all companies are interested in moving to transactional websites, and highlighted the value of sophisticated informational websites in engaging with customers. Combined with social media strategies that extend interaction with clients and customers to places like Facebook and Twitter, SMEs are using their websites to build their

brands, develop a rapport with their clients and establish a strong local presence in their communities.

> *- "where we see the potential is that these tools provide the opportunity for them [SMEs] to take what they do organically well with their current customers to grow their business. You know, they get community building, they get that concept. They do it every day and so we see these new technologies as potentially strong enablers for more growth."*

Focusing on community interaction does not preclude a longer term strategy that includes online transactions with a broader customer base, but it is interesting to note that there is significant value in engaging customers online without transactional capabilities. It is also noted that there are strong differences of opinion as to the costs of developing a customer engagement strategy. Although social media tools like Facebook and Twitter are available free of charge, some SMEs and service providers noted the importance of involving knowledgeable consultants to make effective use of social media.

Another interesting issue that became evident through the interviews is the mismatch between training/educational opportunities on offer by agencies and those perceived to be of value to SMEs. SMEs were very clear that they want specific, targeted training, and noted their frustration in trying to find it. Agencies are keen to work with SMEs, but SMEs are not always aware of what they have to offer. SMEs noted a preference for peer-based learning, suggesting that their primary source of information is often someone or some organization within their industry. All agreed that case studies are an effective way of helping SMEs to understand the benefits of e-business technologies.

Technology consultants/solutions providers can play an important role in encouraging the uptake of e-business technologies. As SMEs can be wary of vendors, independent "neutral" advisers are an important source of information and expertise. As was noted in various quotes above, such consultants can help SMEs understand the business case for investment in e-business technologies, and then offer advice on various technical means of achieving their desired business objectives.

4.0 Recommendations

After in-depth interviews with SMEs and agencies and reviewing the industry and academic literature, we recommend the following course of actions for enhancing the adoption of e-business technologies by Canadian SMEs. We offer three high level recommendations, followed by more specific suggestions (drawn from respondents) that directly address enabling conditions, drivers, barriers and risks.

Continue to promote and develop best practices

Our review of the literature found that fostering best practices was consistently recommended as a means of improving e-business adoption.[16] This situation has not changed. Our interviews and analysis confirmed that promotion of best practices to Canadian SMEs will help encourage e-business adoption. More research on international best practices is recommended, to update the research efforts of the Canadian e-Business Initiative.

Although the literature noted the use of e-business technologies to expand market reach, many of the SMEs we consulted did not rate global presence and promotion as their top priorities. At present, they want to do what they are currently doing in better ways. As they become more comfortable in managing their current operations through e-business technologies, then they can shift their focus to expanding their capacity and global reach.

There is often a disconnect between services offered by agencies and services valued by SMEs. Everyone has some understanding of the benefits of e-business, but the two groups view benefits from different perspectives. Many SMEs are overwhelmed with the pace of change in the technology arena and they need support. Despite the numerous agencies that offer support, SMEs reported that information is fragmented and doesn't meet their needs. Many SMEs view e-business technologies as very individualized and specific to their businesses. They are not satisfied with "one-size fits all" type training sessions. That said, it should be possible to develop tailored sessions that do meet the needs of particular SME types.

We recommend a sector-specific case study based approach to further engage SMEs in the adoption of e-business technologies. The case studies need to focus on champions in relevant sectors. Case studies should present successes and failures, and articulate the underlying reasons for these outcomes. The agencies should focus on highlighting benefits of e-business technology adoption that are of direct relevance to SMEs.

Role of partnerships – an integrated entry point

Partnerships between SMEs and those who can assist them in adopting e-business technologies must include a strong presence from sector specific industry associations, technology provider groups, and community hubs. It is very important to connect SMEs with the right kind of service providers. Time and knowledge constraints among SMEs mean that "do-it-yourself" options are not appealing to many SMEs.

[16] Boston Consulting Group, 2000

We recommend a well-defined and integrated platform for ongoing partnerships. Partnerships can serve to maintain effective and continuous connection between SMEs and well-qualified technology service providers.

Further, there is a need for a "one-stop" gateway for SMEs to access e-business information. SMEs often find it very difficult to connect with the experts who can help them in aligning their business objectives with available e-business technologies. The fact that some SMEs currently turn to their accounting firms for the required connections with experts reinforces the need for such a common platform, facilitating contact between SMEs and e-business enablers.

In sum, we recommend strong partnerships among local agencies, sector specific industry associations, technology service providers, and local businesses. There should be an single entry point for SMEs to get support, consolidating information from the many separate associations that offer e-business advice. This approach will help to address the fragmentation reported by SMEs (and demonstrated with the presence of multiple supporting agencies offering various services across the country). It is noted that all of the agencies interviewed were interested in further collaboration to enable SMEs to make better use of technologies.

Suggested government strategies

There are differences between small and medium businesses in terms of capacity, available time, management capabilities and financial resources. We found that companies larger than about 30 employees were better resourced, and more able to implement sophisticated e-business solutions. (We do note though that even the smallest companies were effective in implementing some beneficial technologies.) We recommend that the Federal government consider the following strategies in regard to e-business adoption by Canadian SMEs.

- Strengthen links between agencies and SMEs through recognition and promotion of such links and by providing financial and management support. For example, the June 2011 Federal budget allocated $100M for digital content development which could extend help to the SMEs for designing their website.
- Encourage connection of IT professionals with SMEs; the absence of such connections is a persistent problem
- Encourage technology-based education in schools, colleges and universities and encourage partnerships with the universities so that students can provide effective solutions to SMEs under a "student connection" program. The aim should be to increase the supply of people well-versed in IT.
- Heed the advice of one of our respondents who pleads "If you decide you're going to do something, stick to it, see it through."
- Conduct or facilitate more sector specific research to better understand the needs of SMEs. Specific topics for future research are outlined below.

In addition to these recommendations, there are many opportunities to directly address the barriers and risks identified earlier in the report. Some suggestions are noted in Table 1, and

should be further developed. Direct quotes from interviewees outlining their recommendations are provided in Appendix 4.

Table 1: Additional recommendations for improving e-business technology adoption, use and effectiveness

	Issue	Recommendations
Enabling Conditions	• Supporting infrastructure/e-literate population	• continue to invest in wired and mobile/wireless broadband infrastructure development (addressing availability and capacity issues) and digital literacy programs (to further encourage demand for, and effective use of e-business technologies) • support for/use of e-business as a central element in a Digital Economy strategy • enforce anti-spam legislation
	• Leading by example	• undertake promotional campaign highlighting Canadian e-business success stories • facilitate online purchasing by government, further encourage Buy Canadian policies ("drinking our own Kool-Aid") • governments should be early adopters of technologies • offer incentives to help large businesses adopt e-business technologies, create trickle down effect to smaller businesses
	• Supportive local community/peer support	• foster further engagement between agencies that support SMEs (e.g. Chambers of Commerce, community economic development offices) and those that encourage technology adoption (e.g. ICT councils) • encourage pilot programs, e-business incubators
Drivers	• Business needs drive technology adoption • Benefits	• develop education/information campaign, highlighting success stories to illustrate the business benefits of technology adoption • improve education/literacy regarding overall business planning
Barriers	• Costs	• offer matching programs to multiply private sector investments in e-business technologies • offer targeted programs to encourage hiring skilled e-business staff (e.g. grants for hiring new graduates) • offer targeted program to encourage software development in Canada, offer incentives to buy Canadian software (which better meets needs of Canadian business community)
	• Technology barriers	• encourage innovation by Canadian service providers (build on current projects that support R&D, extend support through to commercialization and use by SMEs) • encourage uptake/availability of software as a service, cloud computing to allow SMEs access to the same technological capacity as larger enterprises

	Issue	Recommendations
		• encourage adoption of open technology standards
	• SME education	• develop technology "audit" program (similar to home energy audit) to help SMEs understand what technologies they could use more effectively • provide targeted, peer-led education, offered with relevant partners, focused on strategic integration of e-business technologies into business, also provide general business education to improve overall strategic planning capacity • adopt case study based approach • provide vendor agnostic technology advice • aggregate information into a clearing house/portal for e-business strategies • host an Internet Retailer show in Canada (similar to http://www.irce2011.com/2011/)
	Skills shortage	• continue to work with provincial and national ICT agencies to encourage further development of the sector • work with universities, colleges to develop specializations/expertise in business management and technology development • develop a technology classification scheme (perhaps similar to food labelling) to help suppliers and SMEs understand capabilities and value of specific technologies
	Red tape and bureaucracy	• highlight identified challenges (taxation policies, interprovincial trade barriers, customs, zoning) to the appropriate policy makers and stress the urgent need for change • simplify procedures for responding to government opportunities/programs online
	Lack of time	• reduce red tape and bureaucracy • consider mechanisms to provide SMEs with short term assistance to investigate and implement technologies • educate SMEs to understand that done effectively, e-business can create productivity benefits which may reduce process times
	Resistance to growth	• assist businesses to establish transition plans as owners retire, encourage investment in e-business technologies as a means of increasing the value of the business • education to assist SMEs in identifying productivity benefits of e-business adoption
Risks	Non-adoption	• see recommendations regarding benefits, take all possible steps to educate SMEs and their clients on the benefits of doing business electronically • voucher system to support research, help establish further business cases to entice non-adopters
	Competition	• build on other recommendations to ensure that Canadian

	Issue	Recommendations
		businesses thrive in the e-economy
	Change	• foster expertise in change management • encourage businesses to embrace the productivity benefits of process redesign
	Reputational risk	• risk is easily managed by a careful, informed approach to social media technologies, develop policies for engagement, to preserve corporate integrity
	Time	• monitor time spent using social media tools, assess benefits

5.0 Suggested Future Research

There are many avenues for further research. We suggest the following research directions for future investigation of the process of encouraging e-business adoption by Canadian SMEs –

- Sector specific research to understand the business objectives and level of e-business awareness among SMEs. This approach will make it easier to isolate the problems in different sectors and to formulate specific future strategies. This research should go beyond the professional services and retail sectors, and should be done in partnership with industry associations. Explicit efforts should be made to include non-adopters of technology, and micro-enterprises (less than 10 employees).

- Conduct research to assess the feasibility of ideas like technology audits, technology provider certification and the development of financial incentives (such as vouchers, tax credits, staffing programs) for promoting e-business awareness and adoption.

- Carry out additional research to understand the link between SMEs' current business objectives and how available e-business technologies meet their needs. This would require more intensive input from SMEs and a full appreciation of the benefits of various technologies. It could be conducted in partnership with technology vendors.

- Catalogue and assess Canadian initiatives that offer support for e-business development. Recent examples include Google's Get Your Business Online initiative (gybo.ca), and CANARIE's DAIR - Digital Accelerator for Innovation and Research. (http://www.canarie.ca/en/dair-program/about)

- Investigate means to reduce the issue of a fragmented information and support environment for SMEs. Identify high-impact partnerships, and determine how to get buy-in from agencies and SMEs to ensure future collaboration.

- Conduct a systematic review of international best practices for facilitating e-business success. For instance, consider the efforts to increase online engagement of businesses being developed as part of Australia's National Digital Economy Strategy[17] and the European Union's Digital Agenda.[18]

- Consider the importance and potential impacts of a mobile e-business environment. Some respondents noted that this will be of increasing importance in the next decade, but to date there are few initiatives to enable mobile e-business.

We also suggest that associations like Chambers of Commerce and community economic development groups be included as research partners in future research efforts with SMEs. We

[17] Australian Government, 2011
[18] European Commission, 2010

found that referrals are much more effective than phone calls and emails in establishing contact with SMEs. We also find note the need to divide the stakeholder groups into three sections, rather than two as in this effort. Technology providers should be analyzed separately since they are in a position to provide unique perspectives on adoption of e-business technologies.

Finally, we note that there is much additional detail in the interviews conducted for this report that merits further analysis.

Appendix 1: List of Respondents

Agencies: Government Organizations and Industry Associations/Enablers

1. **City of Fredericton/e-Novations** – e-Novations is a city-owned corporation that constructs Fredericton's Community Network – a fibre optic and wireless data service provider
   Website:
   http://www.teamfredericton.com/en/communityprofile/researcheducation.asp#e-novations

2. **New Brunswick Information Technology Council** – The aim of this council is to make NB one of the best places on earth to start and grow a technology company. It provides membership opportunities to SMEs based on the number of full-time employees.
   Website: http://www.nbitc.ca/

3. **Enterprise Fredericton** – It is a community economic development agency dedicated to improving performance in the City of Fredericton, Town of Oromocto, and Village of New Maryland.
   Website: http://www.enterprisefredericton.ca/

4. **Fredericton Chamber of Commerce** – Established in 1874, Fredericton Chamber of Commerce now has 900 members. Nearly 70% of its membership consists of companies that employ 20 people or less.
   Website: http://www.frederictonchamber.ca/

5. **Ontario Ministry of Economic Development and Trade (MEDT)** – MEDT helps SMEs through regional small business enterprise centers and by providing e-biz toolkit as a guideline.
   Website: http://www.ontariocanada.com/ontcan/1medt/en/home_en.jsp

6. **Anonymous Economic Development Department (Ontario based)** – It provides support to SMEs through a Centre for Business and also by arranging different training programs and seminars.

7. **Avonova** – A Stratford, ON grass-root level technology group helping in spread of technology education through schools, libraries and government organizations
   Website: http://www.avonova.ca/index.html

8. **Rhyzome Networks** – Municipal broadband network provider in Stratford, ON
   Website: http://www.rhyzome.ca/

9. **Perth County GreenWorks** – A non-profit environment group interested in encouraging e-business adoption through social media. Based in Stratford, ON.

Profile: http://www.facebook.com/group.php?gid=98851108533

10. **Conceptual Pathways** – A Stratford, ON organization providing internet strategies, software development, and digital media services.
    Website: http://www.conceptual.ca/

11. **The Business Link: Alberta Business Information Services** – The Business Link is a not-for-profit organization supported by the Government of Canada and the Government of Alberta. It provides information, support and advice on various business related issues and work with a network of business development centres across the province.
    Website: http://www.canadabusiness.ab.ca/

12. **Alberta ICT Council** – The Alberta ICT council is an industry-led not-for-profit organization dedicated to support and develop companies working in Alberta's ICT sector.
    Website: http://www.albertaict.ca/

13. **Community Futures Capital Region** – Community Futures is a federally funded government program that provides resources to develop and diversify the local economy by helping entrepreneurs with practical, technical, financial, and business information. It provides loans and support for small business in the region.
    Website: http://www.cfcapitalregion.ca/

14. **Parkland County** – Parkland County has an ongoing intelligent community project with an aim to expand affordable and reliable broadband and wireless connectivity. It also helps and supports local businesses by providing economic development strategy.
    Website: http://www.parklandcounty.com/site3.aspx

15. **Stony Plain Chamber of Commerce** – It provides support for the promotion of the local businesses and the community.
    Website: http://stonyplainchamber.ca/

16. **Productivity Alberta** – Productivity Alberta provides businesses with the connection to the latest in the productivity improvement tools, resources and services. It has a special focus on IT.
    Website: http://www.productivityalberta.ca/

17. **Canadian Chamber of Commerce** – The Canadian Chamber of Commerce provides vital connection between businesses and the federal government. It is a powerful network of 420 chambers of commerce representing a total of 192,000 businesses.
    Website: http://www.chamber.ca/

18. **Information Technology Association of Canada (ITAC)** – ITAC acts as the voice of the Canadian ICT industry by representing a community including telecommunications and

internet services, ICT consulting services, hardware, microelectronics, software, and electronic content.
Website: http://www.itac.ca/

19. **Retail Council of Canada** – RCC is a not-for-profit, industry-funded association representing more than 43,000 store fronts of all retail formats across Canada, including department, specialty, discount, and independent stores, and online merchants.
Website: http://www.retailcouncil.org/

SMEs: Retail and Professional Services

Retail

1. **Robert Simmonds Clothing** – Robert Simmonds is a retail clothing store catering both men and women with on-site tailoring services. Based in Fredericton.
No. of employees: 14
Website: http://www.robertsimmonds.com/

2. **Stylin' Mama Baby & Tot** – A retail store selling baby products as well as baby related essentials for parents. Locations in Saint John and Fredericton
Element 5 – Spa/wellness centre in Saint John
No. of employees: **Stylin' Mama Baby & Tot -** 11, **Element 5** - 35
Websites: http://www.stylinmama.ca/, http://www.element5spa.ca/

3. **Anonymous Ontario based retailer** – no online sales, uses web for customer, community engagement
No. of employees: ~60

4. **Anonymous Ontario based retailer** – no online sales, web used for providing information on products, including sophisticated decision engine to help customers select the right product for their needs.
No. of employees: 10

5. **Golda's Kitchen** – the leading Canadian on-line shopping site for quality kitchenware products – baking, cooking & measuring equipment; specialty cake decorating, chocolate & confectionery supplies; and a wide assortment of kitchen tools, knives & appliances. Based in Mississauga, ON
No. of employees: 30
Website: http://goldaskitchen.com/

6. **Main Street Home Health Pharmacy** – A retail medical supply store focusing on pharmacy and home health products and services. Based in Stony Plain (Parkland County), AB
No. of employees: 7
Website: http://stonyplainpharmacy.com/

7. **Philip Nyren Menswear & Womenswear** – Vancouver Island's premier retail clothing and accessories store for men and women.
   No. of employees: 18
   Website: http://philipnyren.com/

8. **Well.ca** – Well.ca is Canada's largest online health and beauty store. Located in Guelph, no retail store.
   No. of employees: ~50
   Website: http://well.ca/

Professional services

1. **Wilson insurance** – Wilson Insurance, established in 1930, is one of the largest insurance firms in Atlantic Canada. They offer personal and business insurance solutions across multiple industry sectors. Two offices in Fredericton.
   No. of employees: 49
   Website: http://www.wilson.nb.ca/

2. **Accreon** – Accreon is a technology and management services company which helps in reengineering business processes, implementing new information system or transforming entire organization. Based in Fredericton.
   No. of employees: "nearing 100"
   Website: http://www.accreon.com/

3. **Mariner Partners and Mariner Innovations** – Strategic technology solutions.
   No. of employees: 75 (Mariner Innovations) Based in Saint John.
   Website: http://www.marinerpartners.com/en/home/default.aspx, http://www.marinerinnovations.com/en/home/default.aspx

4. **Brovada** – It is a software provider company for insurance industry specializing in business process integration, system conversions, legacy system integrations, and broker connectivity. Based in Saint John.
   No. of employees: 50
   Website: http://www.brovada.com/ca/index.html

5. **Agile Dudes/Site Dudes** – Agile Dudes is a consulting firm specializing in social network solutions, media and brand monitoring, community management, mobile strategy and website design. Based in Toronto.
   No. of employees: 60
   Website: http://agiledudes.com/

6. **Fox Group** – Consultants, analysts and publishers in telecommunications, networking, and call centres. Based in Mount Albert, ON.

No. of employees: 14
Website: http://www.foxgroup.ca/

7. **South West Ontario Veterinary Services** – It is a Stratford based veterinary service provider company that uses the smartphones technology extensively for communications among the partners and customers. They have central database and can connect with the customers in real time.
   No. of employees: 43
   Website: None yet

8. **Anonymous Ontario based financial services company**– It provides comprehensive financial planning services and individualized solutions.
   No. of employees: 9

9. **Tabworks Documentation Services** – It is a Stratford based bookkeeping firm which uses comprehensive accounting software.
   No. of employees: 5
   Website: http://www.tabworks.ca/

10. **Anonymous Ontario based engineering firm** – Civil and structural engineering firm.
    No. of employees: 29

11. **Argyle Communications** – Argyle Communications is a full service communications firm specializing in communications strategies, media relations, reputation management, brand building and other similar services.
    No. of employees: 25
    Website: http://www.argylecommunications.com/

12. **Anonymous Ontario based marketing firm:** Full-service marketing firm, offering branding, marketing, design and web services.
    No. of employees: 10

13. **Solutions by EC –** Spruce Grove AB based technology services provider
    No. of employees: 6
    Website: http://www.solutionsbyec.com/

14. **Sherwood Park Primary Care Network:** An Edmonton based professional service company providing services to physicians
    No. of employees: 60
    Website: http://www.sherwoodparkpcn.com/Pages/default.aspx

Other

Ontario based non-profit organization– It is the biggest non-profit organization in the area with 1000 employees. They use e-business technologies extensively and constantly try to improve their services through technologies. They have mobile applications and are currently working to introduce some applications for tablets. We talked to them to understand the leadership situation in the area and to know about the range of e-business possibilities available in the city.

Appendix 2: Questionnaires

Industry Associations/Government Agencies

1. Describe the nature of your association, and its involvement with Canadian SMEs.
2. What role (if any) does it play in encouraging e-business adoption among your stakeholders? How does your association define e-business?
3. What are your perceptions regarding the adoption of e-business technologies by SMEs in Canada (and/or in your province)? Does your agency conduct research in this area? If so, what have you discovered?
4. Is encouraging further e-business adoption a good idea? (If no, why not?)
5. What are the benefits of further e-business adoption, for your stakeholders and the Canadian economy overall? Is this a priority issue for your organization? (Why/why not?)
6. What are the current barriers to further e-business adoption by SMEs in Canada? Are there specific challenges based on industry size, technological capacity, location, sector etc.? Is cost an issue?
7. What role, if any, does your organization play in reducing these barriers/educating SMEs about e-business adoption?
8. What are the risks in encouraging SMEs to adopt e-business technologies?
9. What are the best ways to educate SMEs on e-business benefits, risk assessment and investment decisions?
10. What successes have you had in encouraging e-business adoption? What about failures? What do you consider to be best practice? Are there international examples we can learn from?
11. What else needs to be done to encourage further e-business uptake? What role can an agency like yours play? Who else needs to be involved? Who should lead?
12. What recommendations would you like to see in our report?

Small and Medium Enterprises (SMEs)

1. Can you describe the nature of your business? What are your products/services? What is your target market (demographics, geography)? How many employees do you have? How long have you been in business?

2. Do you currently use any e-business technologies? (probe for understanding of e-business technologies, but do not provide an initial list) How do you define e-business technologies?

3. (If yes) Why do you use these technologies? How did you decide to adopt them? (probe for specific metrics, e.g. cost-benefit analysis, decision framework)
    a. Have these technologies met your expectations? Why/why not? How do you know?
    b. Do you have a good sense of the costs of using these technologies? Did you have to make changes to your business processes, or make additional investments (e.g. in training) to adopt these technologies?
    c. Have you done any formal or informal analysis to understand the impact or effectiveness of the technologies you've adopted?
    d. Can you provide us with a specific example of one or more technologies that has been effective?
    e. What about failures? Have you adopted e-business technologies that haven't been suitable/successful for your company? What did you learn from this experience?

4. (If no, i.e. the SME is not using any/many e-business technologies) Why haven't you adopted more e-business technologies? What is your decision making process regarding technology adoption? Can you tell us any stories about e-business technologies that have scared you? Have you experienced failure of e-business technologies?

For all interviewees:

5. Are there e-business technologies that you think would be beneficial that you are not currently using? How could these be of benefit?

6. What are the barriers to adopting these technologies? What could encourage you to adopt them?

7. Are there risks in adopting e-business technologies? Do you have a methodology to assess risk? What about risks of non-adoption?

8. Are there some aspects of your business that you could not, or would not, conduct using e-business technologies?

9. Where do you find information on e-business technologies? How could this information be improved? Are you confident of its accuracy or appropriateness for your own business?

10. Would you like help in developing a strategy for further e-business technology adoption in your business? Who do you think would be most able to help you develop a strategy and better understand the benefits of further e-business adoption? Would you be willing to share your experiences with others?

11. Are you familiar with current programs to assist in developing e-business capacity?

12. How would you describe the technological capacity of your organization? Who makes decisions about technology adoption? Is your organization confident in its ability to assess and deploy business technologies?

13. What is the most pressing business challenge facing your organization at the moment?

14. What priority do you place on improving your e-business infrastructure?

15. What else should we know about e-business adoption and use by SMEs in Canada?
16. What recommendations would you like to see in our report?

Appendix 3: Literature Review

Overview of e-business solutions in use by SMEs

We define e-business technologies as internet-enabled technologies, allowing businesses to communicate using the internet, access online services, promote their products and services online, conduct transactions, and manage back-office functions related to serving customers through an online environment.

E-business solutions used by SMEs include:

Email – for contacting customers and suppliers as well as for internal communication within the firm, can be used for advertising campaigns
Voice over IP telephony – for direct and cost effective contact with partners, suppliers, customers, and other authorities
Internet video conferencing – for low-cost face to face communication without being bounded by location
Websites – for maintaining a market presence (including listings in online directories), selling and purchasing online (e-procurement, e-supply chain) and disseminating information about a firm and its products or services
Social media – tools like Facebook, Twitter and LinkedIn can be used to communicate with clients and potential clients (e-marketing), employees and with other businesses
Cloud computing – businesses now have easy access to computing facilities managed by other organizations, accessed online. The advent of cloud computing makes many e-business services more accessible, e.g.:

- **Backup, storage and file sharing** – access to online data storage, shared files (e.g. calendars, contacts) and back-up of business data at low cost
- **Customer relationship management (CRM)** –for tracking customer interaction, gathering data on customers' needs and buying patterns, providing efficient after-sales support, providing customization facilities
- **Software as a service** – Accessing software from other companies on a contract basis (reducing the cost of software acquisition and complexity of software installation and maintenance)
- **Accounting and management tools** – software for integrating back-end administrative procedures, logistics and inventory management, procurement and invoicing with minimum paper work

Benefits of e-business adoption for SMEs

The benefits of e-business adoption can be divided into three broad categories:
1. Direct financial benefits
2. Strategic benefits
3. Management benefits

Direct financial benefits of e-business adoption

Awareness raising/increased visibility for the business. With a website and/or using social media tools, a business can promote its activities to a broad audience in a cost-effective manner.

It can increase sales. E-business can help increase sales by offering a portal to a larger market as well as by making it easier for customers to explore the products and services and order them within very short time. With an online catalogue, customers can get product information at any time. With online ordering capabilities, a retailer can take orders at any time.

It can reduce costs. E-business can accelerate the completion time of business processes. It helps in efficient management of inventory and can enable faster product distribution. These efficiencies can be translated into reduced cost of operations, purchase and sales. SMEs can also benefit from access to better prices and deals for their own purchases on the internet.[19]

It can make businesses more efficient. E-business can help organize the business processes through back end integration with online ordering systems (accounting, inventory control,[20] administrative software programs[21, 22]). It enhances the transaction speed and accuracy by reducing manual paper work, mail and telephone conversations. Some research studies demonstrate that an automated customer order processing system can save two-thirds of the costs of manual order processing.[23]

Strategic benefits of e-business adoption

It can help promote market presence. SMEs can become more visible and accessible to the customers and suppliers by maintaining websites and using social media to promote their goods and services.[24] Online advertising and marketing can create awareness and interest about the products even if the SMEs do not sell online.[25]

It can help access new markets and improve market segmentation. E-business can make new market segments accessible to the SMEs at much lower cost through e-marketplaces, websites or targeted e-mail marketing campaigns. It provides the potential of targeting customers at a global level without maintaining offices in other countries.[26]

It can help formulate marketing strategies. Internet-based communications with customers can help accumulate important data.[27] These data can be used to analyze the needs and buying patterns of customers and adjust the promotions accordingly.

[19] Ontario Ministry of Economic Development & Trade, 2010
[20] The Canada Business Network, 2011
[21] Ontario Ministry of Economic Development & Trade, 2010
[22] Retail Council of Canada, & Industry Canada (2010)
[23] Ontario Ministry of Economic Development & Trade, 2010
[24] The Canada Business Network, 2011
[25] Statistics Canada, 2005
[26] The Canada Business Network, 2011
[27] Ontario Ministry of Economic Development & Trade, 2011

It can enable market responsiveness. E-business applications provide companies with the ability to update product offerings very quickly (unlike with printed catalogues) and therefore furnish customers and suppliers with current information at a minimum cost.

It gives competitive advantage. Web presence, email contact points and online communication can help SMEs to portray a positive professional image and can ensure a level playing field while competing with larger corporations. The Internet is also a source of information about the competitors.

It can help create new business models. E-business can provide a platform where SMEs are able to create a nexus of strong relations with new global partners[28] including wholesalers, suppliers, designers, advertising agencies, banks, retailers and many more.

It can give quick access to networks of businesses. E-business offers SMEs the opportunity to connect with other business networks and obtain competitive intelligence without a substantial financial commitment. The Internet can aid in finding new suppliers, employees and business partners.[29] For example, e-marketplaces provide SMEs the opportunity to enter the supply chains of larger companies.[30]

It provides innovation opportunities. Smaller size and flatter organizational structure of SMEs lend greater opportunities for innovation through e-business.[31]

Management benefits of e-business adoption

It can help in customer relationship management. E-business solutions provide 24/7 customer service abilities. Websites, e-mails, FAQs and auto-responders[32] give customers easy and quick access to the product information at a minimum cost.[33] CRM software enables real time data collection and accurate forecasting[34] which in turn can help in managing a productive relationship with the customers.

It can make the business mobile. Businesses are no longer location-bounded. E-business provides the ability to conduct the business operations from anywhere, and allows customers to interact with the business from their choice of location.

It ensures effective internal and external communication. Online communication tools improve communication with employees, suppliers, customers and partners.[35]

It can improve supply chain management. E-business can aid in communication and interaction with the supply chain partners for purchasing direct and indirect materials. Internet-based systems provide flexibility in response time and delivery arrangements to all the parties.[36] SMEs

[28] The Canada Business Network, 2011
[29] The Canada Business Network, 2011
[30] Stockdale & Standing, 2004
[31] Simpson & Docherty, 2004
[32] The Canada Business Network, 2011
[33] Ontario Ministry of Economic Development & Trade, 2011
[34] The Canada Business Network, 2011
[35] The Canada Business Network, 2011
[36] Statistics Canada, 2010b

can hold reverse auctions in the e-marketplace where the suppliers bid for the required materials and this practice may lead to reduced materials cost.[37]

Costs of e-business adoption for SMEs

The costs of e-business adoption for SMES can be segregated into two broad categories:

1. Direct costs
2. Indirect costs

Direct costs of e-business adoption - example of establishing web presence

The Ontario Ministry of Economic Development and Trade provides a systematic analysis and estimates of the direct costs associated with establishing a web presence. In a handbook explaining how SMEs can profit from e-business, they offer approximate cost estimations for low, medium and high level online presence. These estimates can be a helpful source of information for Canada overall. The cost items and approximate estimations are presented in Table 1. There are additional costs that will be explored with businesses during the data collection phase of this project.

Table 2: ***Estimates of direct costs associated with establishing a web presence***

Item	Description	Approximate cost of adopting e-business		
		Low	Medium	High
Hardware	The cost of computer systems, peripherals	$200/yr for leased hardware	$300/yr for leased hardware	$800/yr for leased hardware and software package
Software	Software can be proprietary or open-source	$0/yr for open source software	$700/yr for leased software	$800/yr for leased hardware and software package
Technology maintenance	On-call technology maintenance provider who will service technology and software and correct any problems. This provider may be retained for a fixed fee	$0/yr – assuming no technical problems	$500/yr – needs based support $1200/yr – retained technician	$1700/yr – needs based support assuming 1 hour per month of work needed
Internet service provider (ISP)	This cost may vary significantly depending on the speed (low or high) of the internet	$200/yr for unlimited dial up internet	$800/yr for high speed internet	$1200/yr for high speed internet

[37] The Canada Business Network, 2011

Item	Description	Approximate cost of adopting e-business		
		Low	Medium	High
Website development	Simple, information-based website can be designed using free templates available on the internet after dedicating some time and learning. Website design may also be done by a freelancer or design firm.	$0 – doing it yourself, time consuming	$2,500 – design by freelancer, one time charge	$5,000 and up – depends on the needs, generally includes content management system
Online store	Includes shopping cart and payment processing systems on website. Software packages are available for low cost e-commerce solutions.	$0 down plus commission on sales; existing templates	$5,000 – custom design, one-time charge	$10,000 and up – custom design, price varies depending on needs
Content creation/ development	Costs associated with scanning pictures and hiring a writer for sections of the website. Alternative option – do it yourself or hire marketing agency	$0 -does not include the cost of own time	$1,000 one-time charge	$5,000 and up depending on needs
Website maintenance	Annual maintenance can be about 20% of the initial investment. Alternatives – e-commerce solutions package or do it yourself using content management system	$0/yr – in-house updating, does not include cost of own time	$700/yr – part of service agreement	$1,000/yr for more complex updates
Domain name registration	One domain name can only cost $15/yr. Registration can be done in several domains to protect brand name. Registration needs to be renewed.	$0 with certain hosting solutions	$30/yr	$60/yr for more than one domain name
Web hosting	Purchase of web hosting package or using an e-commerce solution for free hosting	$0/yr with some e-commerce packages	$100/yr	$300/yr and up

Source: Ontario Ministry of Development and Trade, 2010 (pp. 13-14, modified for this report)

Indirect costs of e-business adoption

Some indirect costs associated with e-business adoption by SMEs have been identified in the academic literature.[38]

Transformational costs. SMEs can experience organizational costs while transforming old work practices to new ones. Corporate shapes can be changed while the managers/owners try to integrate the information flow at the business and project level.

[38] Love et. al., 2005

Learning costs. A temporary loss in productivity may be experienced while the employees move through the learning curve and make themselves familiar with the new systems and activities.

Management time. One research study in the context of Australian SMEs[39] found management time as the most important indirect cost of e-business adoption, noting that with the adoption of new technologies, management needs to allocate time for revising, approving and modifying strategies related to e-business. This imposes a high cost on some SMEs.

Risks of e-business adoption for SMEs

Academic and industry literature identify multiple risks that the SMEs need to be careful about when making decisions about e-business adoption:

Implementation costs can be higher than initially anticipated. SMEs need to be careful in the decision making and planning stage so that they do not overrun the initial setup/implementation costs. SMEs often lack risk identification and management capabilities[40] and therefore may become vulnerable to cost overruns.

Systems performance can be lower than expected. The performance of particular systems may be lower than expected (e.g. websites may not generate an immediate return and may require additional investment to raise customer awareness of online presence). This can pose a deeper problem for the SME if there is not enough money left to fix the problem.

Risks of security breach. Another important risk to consider is the possibility of computer systems security breach (e.g. inadvertent release of customer or company data).[41] However, if e-business practices are paired with protective software and other effective security practices, then this risk is not that substantial.

The biggest risk that SMEs can face is – NOT getting involved in e-business.[42]

Larger businesses have already adopted internet-based business practices. If SMEs do not act rapidly, e-business can have a disruptive impact on their businesses. The threats for not developing e-business capabilities could range from higher competition to losing the whole business.[43] SMEs without an online presence can be squeezed out of the supply chain and can be displaced from the local business area by a company selling online. Failure to capitalize on innovations in the e-business field may result in decreased efficiency and productivity and loss of market share to competitors.[44]

[39] Love et. al., 2005
[40] Love et. al., 2005
[41] Love et. al., 2005
[42] Industry Canada, 2010
[43] Industry Canada, 2010
[44] Industry Canada, 2010

Barriers to e-business adoption for SMEs

Barriers to e-business adoption refer to the factors that inhibit SMEs from committing to internet-based business practices. There are four broad categories of barriers: Financial, Technology, Management, and Security.

Financial barriers

Many research studies, including a recent one[45] conducted on 79 SMEs operating in Western Newfoundland, Canada, note the financial requirements for e-business[46] are one of the most common causes for non-adoption. SMEs are very concerned about start-up costs (which include connection costs to the internet, cost of hardware/software, setup and maintenance costs).[47]

Technology barriers

Lack of appropriate knowledge/skill – Some research studies point out that there is a lack of knowledge about e-business applications. One recent study[48] conducted on 173 Canadian SMEs found that the respondents significantly disagreed with the statement "we know what kind of e-business is right for us." This finding points to the existing knowledge gap among Canadian SMEs about available e-business applications and their benefits. The roundtable discussion on Canada's e-business opportunities in 2000 also points to the shortage of required IT talent.[49] There is also a fear of handling new technologies and making mistakes.[50] The 2001 roundtable[51] on e-business indicates that SMEs are ill-equipped in to make the transition.

Dependency on third party for skills – SMEs do not have internal resources to adopt e-business themselves and generally need the help of third parties. According to a qualitative research study by Industry Canada,[52] there is no standard competency assessment procedure for these third parties and as a result, the issue of quality and trust acts as barriers to adoption.

Too many options available – Another major barrier SMEs face is the overwhelming number of choices in terms of product offerings[34]. This situation can potentially lead to more confusion when they already lack an appropriate technical knowledge base.

Management barriers

Little incentive to change business model – One of the major barriers to e-business adoption by SMEs is an unwillingness to change an existing business model. If a business model is working, there is a risk in changing it, and the reward is uncertain. Without a clear

[45] Jagoda, 2010
[46] Côté et. al., 2005
[47] Kaynak, et. al., 2005
[48] Archer, et. al., 2008
[49] Boston Consulting Group, 2000
[50] Ontario Ministry of Economic Development & Trade, 2010
[51] Boston Consulting Group, 2001
[52] Ontario Ministry of Economic Development and Trade, 2010

understanding of the potential return on an investment in e-business technology, businesses are reluctant to allocate resources away from their successful business practices.

Fear of losing reliable local relationships – Many SMEs have been dependent on strong local relationships with few customers and suppliers.[53] With the advent of e-business, SMEs may face fear of losing those time tested relationships[54] and thus block any change.

Lack of interest in learning new skills – SMEs sometimes face difficulty in changing the mindset of the owners/managers who do not have an interest in learning new skills.[55]

Gap between early expectations and reality- In their Innovation Analysis Bulletin,[56] Statistics Canada illuminates the gap between early expectations about e-business benefits and reality as one of the significant barriers. In 2006, only 27% of small firms reported that they felt any cost reduction from doing internet-based business compared to 40% of large firms. 34% of small firms reported access to global market as a benefit compared to 55% of large firms. This issue calls for more research to analyze whether the small firms in Canada have proper evaluation techniques in place, and whether the benefits to small and large firms are indeed different.

E-business opportunities do not apply to the business- The type of product and service may act as a barrier to e-business adoption.[57] In the Survey of Electronic Commerce and Technology (SECT), Statistics Canada found about 50% of the SMEs reporting that their products or services do not lend themselves to e-business.[58]

Perception of time constraints - SME owners/managers may hold a perception of time constraints around e-business implementation. The idea of small targets, outsourcing, and time saved after adoption could be promoted to tackle this barrier.

Lack of communication with managers, employees and supply chain partners – Managers and employees may need help in accepting the idea of using e-business. The employees' fear of being displaced by the technology[59] and consequential resistance may act as strong barriers.[60] Supply chain partners may not be ready for integration.

Security barriers

Privacy concerns- Privacy concerns[61] and lack of trust in internet-based applications can sometimes act as barriers to e-business adoption. However, Statistics Canada reported that only 18% of private firms in the survey cited security concerns as a barrier to e-business

[53] Archer et. al., 2008
[54] Jagoda, 2010
[55] Jagoda, 2010
[56] Urbach, 2007
[57] Côté et. al., 2005
[58] Johns-Huggins, 2007
[59] Jagoda, 2010
[60] Ontario Ministry of Economic Development & Trade, 2010
[61] Boston Consulting Group, 2001

adoption (based on the 2005 Survey of Electronic Commerce and Technology).[62] There are reservations in the retail sector about the cloud computing due to privacy issues.[63]

Fear of fraud- The fear of fraud, for instance in the case of online payment,[64] may discourage SMEs to take up e-business applications.

How do SMEs make decisions about e-business technologies?

We have found few academic papers and industry reports that specifically focus on the criteria followed by SMEs while making decisions about adopting and implementing e-business technologies.

Most of these reports find that the SMEs do not have a clear strategy regarding IT or e-business technologies. As a result, either there is no planning or it is at best ad-hoc.[65] In a study done in 2006, IDC Canada reports that about 50% of Canadian SMEs have two or less fulltime IT staff.[66] Another study by Canadian e-Business Initiative finds that the owner or the president makes the final decisions after consulting with trusted employees and outside consultants or advisors.[67] The decision maker does not always have sound knowledge about technology; therefore the choice often depends on intuition, business expertise and some good fortune.[68]

The story is similar in case of post-adoption/implementation analysis. Follow-up evaluations are almost non-existent in SMEs, as reported by the Canadian e-Business Initiative.[69] Most of the SMEs do not perform any cost benefit or specific matrix analysis for evaluating the technologies. The SMEs, at most, have some anecdotal information about the functionality of the technology – for example, "employees are not complaining," "revenues have increased without any new hire, so the technology must have worked."[70]

Relevant Canadian studies and their recommendations

We have reviewed several earlier reports which specifically focus on Canadian e-business opportunities to understand the trajectory of progress and analyze the recommendations. These reports include several studies from the Canadian e-business initiative roundtables. The key recommendations in those roundtable reports are as follows –

- Foster e-business creation and growth by building Canada's global e-Business brand[71]
- Expand the e-business talent pool in Canada[72, 73, 74]

[62] Johns-Huggins, 2007
[63] Retail Council of Canada, 2010
[64] Taylor & Murphy, 2004
[65] Canadian e-Business Initiative, 2004a
[66] IDC Canada, 2006
[67] Canadian e-Business Initiative, 2003a
[68] Canadian e-Business Initiative, 2003a
[69] Canadian e-Business Initiative, 2003a
[70] Canadian e-Business Initiative, 2003a
[71] Boston Consulting Group, 2000
[72] Boston Consulting Group, 2000
[73] Boston Consulting Group, 2001

- Address the barriers to SME adoption through education and "how-to" training. Importance has also been given to providing clear connection with ROI and dealings with security related fears. [75, 76]
- Provide leadership by making the Government online.[77]
- Enhancing the broadband structure[78]
- Engaging educational institutions and technology solution vendors in the process of SME adoption[79]
- Enhance partnerships between government agencies and industry associations[80]
- Create a detailed repertoire of success (and failure) stories[81]
- Create a supportive network of the stakeholders to help SMEs in international trade[82]

After evaluating these recommendations and analyzing our agency and SME interviews, we find that most of these suggested strategies are still valid. We want to point out that these recommendations may have not been carried out successfully and as a result, we are hearing similar problems and recommendations from our interviewees. For example, the Fast Forward 5.0 report[83] published in 2004 provides an e-report card for Canada where the state of the Canadian e-talent pool has been shown as "paused." During our research and interviews with agencies and SMEs, we still hear that the situation with e-talent/IT experts has not changed much in 2011. Therefore, we suggest a thorough re-evaluation of the problems that have been identified over and over again but a reasonable solution has not yet been achieved. We discuss our findings in the following chapters focusing on all these relevant issues and finally provide our recommendations by making a connection with the suggestions provided in previous reports.

[74] Canadian e-Business Initiative, 2003b
[75] Boston Consulting Group, 2001
[76] Canadian e-Business Initiative, 2003b
[77] Canadian e-Business Initiative, 2002
[78] Canadian e-Business Initiative, 2003b
[79] Canadian e-Business Initiative, 2003b
[80] Canadian e-Business Initiative, 2003b
[81] Canadian e-Business Initiative, 2004a
[82] Canadian e-Business Initiative, 2004a
[83] Canadian e-Business Initiative, 2004b

Summary of Relevant Data

1. Canadian Chamber of Commerce surveyed 953 companies in March, 2009. 66% of the respondents employed between 1-10 people and 24% of respondents employed between 11-100 people.

— **Canadian Chamber of Commerce. (2010).** ***Powering up the network: A Report on Small Business Use of E-business Solutions in Canada.*** **Retrieved February 25, 2011 from** http://www.chamber.ca/images/uploads/Reports/2010/Powering-up-the-NetworkFeb2010.pdf

2. This recent study analyzes the level of ICT adoption and supply of high-quality personnel in New Brunswick, Canada.

— **Labour Adjustment Committee (2011).** ***Assessment and recommendations on the shortage of HQP talent in Communication and Information Technology.*** **Retrieved March 6, 2011, from** http://www.nbitc.ca/sites/default/files/Labour_Adj_Committee_Report_Final.pdf

3. This report provides insight about the stumbling blocks and the building blocks for the Canadian e-businesses and e-business leadership.

— **Boston Consulting Group, Canada. (2000).** ***Fast Forward: Accelerating Canada's leadership in the internet economy - Report on the Canadian E-business opportunities roundtable.*** **Industry Canada, Ottawa.**

4. This report provides insights and recommendations on how Canada can move to the next level in the e-business arena.

— **Boston Consulting Group, Canada. (2001).** ***Fast Forward 2.0: Taking Canada to the next level - Report on the Canadian E-business opportunities roundtable.*** **Industry Canada, Ottawa.**

5. This study provides insight about the state of Canada's digital economy focusing on e-adoption by consumers, businesses and government and also offers useful recommendations.

— **Canadian e-Business Initiative (2003).** ***Fast Forward 4.0: Growing Canada's digital economy.*** **Industry Canada, Ottawa.**

6. This study discusses the e-business environment of Canada focusing on state of e-readiness, investment environment and e-business achievement.

— **Canadian e-Business Initiative (2004).** ***Fast Forward 5.0: Making connectivity work for Canada.*** **Retrieved March 6, 2011, from** http://www.ceprc.ca/reports/fast_foward_e.pdf

7. This study provides a SWOT analysis of the e-business adoption by Canadian SMEs and also discusses implementation issues and recommendations.

— **Canadian e-Business Initiative (2003).** ***Net Impact Study Canada: The international experience (Interim report).*** **Retrieved March 3, 2011, from** http://www.ic.gc.ca/eic/site/ic1.nsf/eng/03701.html

8. This study discusses the state of adoption by Canadian SMEs, the decision making process/factors, and the implementation strategies.

— **Canadian e-Business initiative (2003).** ***Net Impact III: Overcoming the barriers.*** **Retrieved March 3, 2011, from** http://www.ic.gc.ca/eic/site/ecic-ceac.nsf/vwapj/NetImpact3.pdf/$file/NetImpact3.pdf

9. This study provides a SWOT analysis of the e-business adoption by Canadian SMEs and also discusses implementation issues and recommendations.

— **Canadian e-Business initiative (2004).** ***Net Impact Study Canada: Strategies for increasing SME engagement in the e-Economy.*** **Retrieved March 6, 2011, from** http://www.ic.gc.ca/eic/site/ecic-ceac.nsf/vwapj/NetImpact4.pdf/$file/NetImpact4.pdf

10. This study provides an overview of the state of technology diffusion in Canada (in different regions) focusing on the use, benefits and barriers.

— **Centre for the Study of Living Standards (2005).** ***The diffusion and adoption of advanced technologies in Canada: An overview of the issues*****. Retrieved March 3, 2011, from** http://www.csls.ca/reports/CSLS2005-05.pdf

11. IDC Canada, on behalf of ITAC, conducted this survey on 300 Canadian small and medium businesses (employee no. ranging from 20-999) and reported about adoption and barriers.

— **IDC Canada (2006).** ***Does ICT matter to SMBs in Canada?*** **Retrieved March 3, 2011, from** http://www.itac.ca/uploads/research/06idc.pdf

12. This report analyzes the benefits and barriers to e-business adoption by focusing on 5 separate sectors in the OECD countries.

— **OECD (2004).** ***ICT, E-business and SMEs.*** **Retrieved March 13, 2011, from** http://www.oecd.org/dataoecd/32/28/34228733.pdf

13. This report has a specific chapter on how SMEs should select e-business solutions/technologies

European Commission (2008). eBusiness Guide for SMEs: *eBusiness Software and Services in the European Market.* Retrieved March 13, 2011, from http://ec.europa.eu/enterprise/e-bsn/ebusiness-solutions-guide/docs/eBusiness_Guide_for_SMEs.pdf

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Canadian e-Business Initiative (2003a). *Net Impact III: Overcoming the barriers.* Retrieved March 3, 2011, from http://www.ic.gc.ca/eic/site/ecic-ceac.nsf/vwapj/NetImpact3.pdf/$file/NetImpact3.pdf

Canadian e-Business Initiative (2003b). *Fast Forward 4.0: Growing Canada's Digital Economy.* Industry Canada, Ottawa.

Canadian e-Business Initiative (2004a). *Net Impact Study Canada: Strategies for increasing SME engagement in the e-Economy.* Retrieved March 6, 2011, from http://www.ic.gc.ca/eic/site/ecic-ceac.nsf/vwapj/NetImpact4.pdf/$file/NetImpact4.pdf

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Appendix 4: Interviewees' Recommendations

These are quotes from respondents offering recommendations to encourage further e-business adoption, mitigate risks, and/or remove barriers.

Education/Leading by Example

- We need a top level message that keeps going out from our political leaders, from our business leaders, from our association leaders. Then we need to roll out the best practices, particularly for kind of firms that an individual SME can relate to, and then we need handholding so that you get to execution.
- This [encouragement of e-business adoption] is all going to come to fruition when you run a national campaign because then the message becomes much stronger. There's more intensity to it. There are more people involved. People are giving the message out all around the same timeframe. Their concerted message is their coordinated message, so we need a national campaign.
- The mindset has to change before priority can be set, IT as enabler of change, not just a cost centre.
- Would love to see governments, provincial, federal, municipal be more early adopters of Canadian innovation, that's a big step.
- Make it a government wide priority, have the government lead in ICT adoption. The government can also play a key role in working directly with the business community, to work on education, not only on potentially new programs but the existing programs that could accelerate ICT adoption.
- It would be great if as a country we drank our own Kool-Aid. In the US, spend more money on marketing dollars, better marketing materials, don't get our fair share of that…
- Britain, Australia, and Denmark are leaders. Canada produced the competition panel review report in 2008, there are lots of good suggestions in there that should be revisited. Also Korea is doing some good things. We keep getting bogged down, relying on our natural resources…
- We think if we more broadly educate business on how technology can help them it will generate more of a pull through. If you see someone else in your industry, related industry, you can relate to it better than a solution in a completely different industry.
- Provide simple instructions on how to source expertise
- In general there needs to be more training not just in business programs, MBAs, but also in other forms of education about business cases. It's not always about one way of doing things as a cost savings vs. another. You have to look at productivity gains, additional sales you can generate as well as cost savings. Generally, other professions, trades could benefit from this education, not just those in business schools. We need more education on this across the board, especially as more of the population ends up working not for other organizations but working for themselves. They need more education, tools to figure out how to get more productive.

- There's almost too much information to the point where companies are overwhelmed and don't know what to do with the information. I think that's where industry tradeshows, and that sort of thing, become important, or conferences, where companies begin to learn through those sorts of venues, or through trade journals, what others in their industry are doing with technology and in terms of what works and what doesn't. In some cases, I think there are opportunities for consulting firms to make the decision making process simpler for the end customers. And you know, if you've got a solution that works for one, let's say law firm or insurance brokerage, then presumably if the solution helps that one organization, then there's a good chance it can help others as well.
- Offer case studies for specific audiences.
- Show me how it will save me time, save me money, show me the cost benefit analysis. How do I easily implement it?
- If there was a list of different types of opportunities with some quantifiable evidence, how businesses in that sector have benefitted, case studies with the opportunities and some simple instructions how to source out the expertise to make it happen, that might be a benefit to some people that can't naturally see the opportunities. Some people are able to look at a new space and see opportunity and have the confidence to lead ahead of the pack without it being proven. Some business owners are more technically driven and are passionate about their specific area of expertise, but are not, don't have the type of brain to see the opportunities and to chase after them. So some kind of resource website that the government helped put together to present the opportunities and give some case studies to authenticate the opportunity as being a real one with some good return on investment and a few tips of how to outsource some expertise, it may be helpful to some businesses.
- We have a lot of capacity out there in our colleges and universities to help with this. This is not the kind of thing where you need a PhD thesis. There's a lot of capacity in our schools and a lot of it actually could be useful to the students to do these case studies and develop these best practices that would help firms and that would help the students who by the way, would then become much more employable and much more useful in being employed in whatever industry they decide to go into. So there's a huge untapped resource, insufficiently tapped resource there where you could do good for the schools and you could do good for the SMEs by having them work on that. Our governments have a whole bunch of offices that are out there to service SMEs and so on, and they could become the focal point to get these two communities together, not from the standpoint of having the schools do a lot of theoretical research, but having to do a specific project on getting in there and studying a given industry and producing some best practices. And then also, getting them in there and doing some implementation consulting.
- A business services person, a massage therapist, a dentist, the lawyer, a consultant, they all have the same challenges, right? So once I do a tech profile for those, once you do one profile of tech solutions you can help cookie cut it across many different SIC codes and whatever, and I think that is maybe what Industry Canada is missing.
- I could imagine if I were to get a biweekly or monthly email that was all about stuff to help you with your business – it could be various services, it could be software, it could be events they're doing. It might just be introducing a new software that somebody's recommended or it might be an online solution or whatever, or it might be that they're hosting events or

seminars or anything. But if it was "here's stuff to help you with your business" I do think that smaller businesses would be more likely to adopt these things.
- Could do a technology audit, like a home audit, help you understand what you could use.
- Every year there's an internet retailer show in the US, for internet retailers. 4-5000 businesses show up,. Having that here, making one here would be fabulous. You would have to get that company to do it here, don't reinvent the wheel, get Industry Canada to pay to run one of these in Toronto, for Canadian members, to deal with Canadian situation http://www.irce2011.com/2011/

Partnerships
- How about the Federal government partnering with the Canadian Chamber of Commerce, establishing a joint program? We're the largest business association in Canada. We have footholds right across the country, there's no one else that has this reach. We can penetrate into these communities that are untouched. Anyone can go onto the web and try to find information, but if it was at the local level…
-

Investment and Incentives
- What about some incentives for small business to invest? That would be brilliant. There are incentives for many industry blocks to invest in innovation but there's nothing for small business, to my knowledge.
- The government could encourage large businesses to invest, trickle down effect to smaller businesses. Match investments, multiply private sector investments.
- Maybe even with Industry Canada, maybe there are ways that they could give incentives to the industry – rather than incenting us as SMEs, give incentives to the industry to get them to do more for SMEs.
- The government could assist in highlighting businesses that are actually Canadian owned and selling to Canadians encourage suppliers to get online.
- They could look at tax credits toward purchasing new software, or tax credits to developers to develop business software here in Canada, that meet the needs of Canadians, tax differences etc. How do I incentivize businesses, helping them with the costs?
- I would suggest – if it was my money that I was going to spend – I would say offsets for technology education courses. So for example, you know, a lot of people may go use, buy Microsoft Office but they may not have ever taken a course on how to get up to speed quickly, right. So maybe customized training, so maybe getting an incentive to hire another business to teach me what we need.
- Offer grants, funding to help businesses figure out how to integrate e-business technologies into their business strategies, strategic thinking is key.
- We need to encourage innovation, a lot of times that's dollars, put investment dollars into people that have great ideas, need to take them to commercialization
- Programs to support innovation, investment in Canadian technologies
- I wouldn't provide financial incentives, wouldn't provide tax cuts, funding – backfires in long term as businesses come to rely on incentives

- I think programs to increase the adoption of technologies, improve productivity, commercialization is as important as the pure research. IRAP is at the early end of this, mix of encouraging pure R&D as well as applied research to industry processes, but not very accessible to a lot of SMEs. If these programs look at technology not just in a lab or pure scientific setting, but in more of an applied and commercialized setting.
- As soon as my company is finished developing a technology, a key word I use, technology, and they start commercializing their products, SR&ED IRAP come to a jittering stop. So now the company has to figure out, I'm at a critical point in my organization. I've got a team full of engineers and I don't need them to develop my technology anymore. I need customer support people. I need to make decisions and how to sell my product, how to market it, how to do sales, how to do sales management, how to build my sales team, how to build my customer support team. A complete different set of tools, right. Perhaps, I now need to fire my fifty cent dollar R&D staff. I have to hire my dollar sales team, right. So if I could afford ten R&D people, I can only afford five people now because my fifty cent dollar is gone. Big issue, right?

Staffing/Identifying Skilled Labour

- I've used programs before to subsidize staff, e.g. if someone just finished from trade school, you would get some help, compensation from the government, program that would allow a person like me to hire a student, someone who could help.
- list different types of opportunities and benefits
- It's like a food label. Maybe Industry Canada could look at something like classification of businesses that have this type of skill set relevant to technology. There are tons of metrics that could help classify and differentiate companies. Identify metrics to help classify and differentiate among providers. How does the customer differentiate what they're looking for? Beneficial on both sides, we went through our own marketing scenario to help us identify who the right customer is. It wasn't easy, we're trying to help businesses, to get businesses out of just buying stuff and get them into researching the best solutions. I believe there is a role to help classify the IT space, help businesses understand what companies do.

Government Approaches/Actions

- The government has a hard time talking to people like me. It's quick to abandon things, the minister changes, the whole thing dries up. If you decide you're going to do something, stick to it, see it through.
- Start by figuring out where the CEO gets his or her information on really significant business topics, it probably isn't government. It's not a speech by the Minister of Industry that's going to make the CEO go "Oh, I better do this". You have to target the CEO in order to really get the level of commitment behind it that you want. So then you have to look at what does he or she hear, see and read, where do they go, where are their sources of information? Looking at peer networking organizations, where CEOs go for feedback, there are so many of these, which are executive level, CEO level staff, where ideas catch fire. They say "geez, everyone's doing this, I better do it too" so giving them a sense of what their peers are doing. Step two is actually turning that into action, e.g. I saw this study that said

businesses in my sector, just like me, are doing this, and then I went to whatever organization, e.g. Young Presidents' Organization, there were three seminars in the last 6 months about this topic, that's what they're all talking about.

- I'd like to see a national ICT adoption strategy. The government could take a lead on this, with industry folks, and maybe some kind of secretariat that they chair, but there's the Chamber, ITAC at the table. …If we're serious about this, we need to allocate resources for investment in ICT.

Technology/Infrastructure

- Bring hosting, cloud based solutions to small and medium sized enterprises
- If we're allowed to access and build on open source products, then that would allow us to write technology, or implement technology based on a nationwide standard that belonged to all of us.
- Stopping people from spamming us, that's a real issue, we implement quite a bit of technology to stop people from sending us spam.
- Availability of broadband … it isn't bad, but it could be much better in many areas. We think that needs to remain a priority for the government. The government needs to rely on the private sector, but there has to be a big push on it to make it happen.
- Don't let the incumbent dictate the telecom infrastructure in your community. If you do that – and most people have no choice, most communities – then it [the incumbent] will not expand any faster than their specific requirements.
- If you're asking how to spark communities to help incubate, I would argue that you need e-Novations [Fredericton's municipal telecommunications company] in every community, and you need to know what the mandate of that company is, right. Here's the book. Here's how you get that done. People don't have to knock down those barriers on their own.