



Internet/e-business technologies acceptance in Canada's SMEs: an exploratory investigation

Internet/
e-business
technologies

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Abstract

Purpose – This study aims at contributing to the discussion related to what causes Canadian small and medium-size enterprises (SMEs) to be reticent about accepting internet and e-business technologies (IEBT) in their operations. The research also seeks to gain an understanding of the relative importance of each of the selected factors in the research setting.

Design/methodology/approach – A survey was conducted in the Atlantic region of Canada. Questionnaires were mailed to key SMEs' informants. Data analysis was performed using the partial least squares (PLS) approach. A research framework based on the technology-organization-environment (TOE) frameworks was used to guide the research effort. Such contingent factors as perceived benefits, management commitment/support, organizational IT competence, external pressure, information systems (IS) vendor support, and availability of financial support, were used to develop relevant hypotheses.

Findings – The study's findings indicated that perceived benefits, management commitment/support, and external pressure are significant predictors of IEBT acceptance in the sampled SMEs; the results did not show that organizational IT competence, IS vendor support, and availability of financial support positively influence IEBT acceptance in the sampled SMEs.

Practical implications – Policy makers, industry leaders, and small business operators wishing to understand some of the reasons why certain SMEs in the country lag in the adoption of IEBT and related technologies can benefit from the information provided in this study. The study also alerted the attention of local IS vendors and financial institutions to what can be done to strengthen IS adoption in Canadian small businesses.

Originality/value – A handful of previous research in Canada has researched IEBT adoption; however, some of these studies are dated. A such, this current investigation of IEBT acceptance in a less endowed part of the country is timely and welcoming; it also serves to complement other prior studies in the country and elsewhere. A scan of the extant literature indicates that no previous study in the country has modeled some of the factors (e.g. the availability of financial support) as were used herein. The inclusion of such a factor enriches insight in this area of study.

Keywords Internet, Electronic commerce, E-business technologies, Technology adoption, Technology led strategy, Small to medium-sized enterprises, Canada

Paper type Research paper

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1. Introduction

The emergence of the internet has presented businesses (small and large) with an opportunity to improve performance and enhance revenue generation (Hoffman *et al.*, 1995; Riemenschneider and McKinney, 1999; Chang and Cheung, 2001; Turban *et al.*, 2010; Martinez-Lopez and Martinez-Lopez, 2010; Weisberg *et al.*, 2011). Accordingly, businesses around the world, including Canadian enterprises, utilize internet and e-business technologies (IEBT) to support online or electronic commerce (e-commerce) and electronic business (e-business) activities. Others (e.g. Davis and Vladica, 2006) have used the terminology "IEBT" in their studies. IEBT as used in this study is synonymous with comparable usage elsewhere in the literature. For example, Net Impact Study Canada (2002, 2004), Tarafdara and Vaidya (2006), Wymer and Regan (2005), Al-Qirim (2007), Riemenschneider and McKinney (1999), and Chang and Cheung (2001) used "internet business solutions" (IBS), "e-commerce technologies" (ECT), "e-commerce/e-business internet technologies" (EEIT), e-commerce communications and applications technologies, web-based technologies, internet/WWW technologies, respectively. Thus, the applications and technologies supporting e-commerce and e-business will hereafter be referred to as IEBT. Examples of IEBT include the internet, e-mail, and secured online transactions, and web page ownership. Having said that, Sadowski *et al.* (2002, p. 76) noted that "in establishing a new connection to the internet, new users are required to adopt a series of related new technologies."

A recent industry report shows that Canadian online businesses sold CAD\$13.8 billion (USD\$12.9 billion) in 2007, and e-commerce sales in Canada will reach CAD\$22.8 billion (USD\$22.2 billion) in 2014 to show a compound annual growth rate (CAGR) of 10.6 percent (Grau, 2008). Comparable trends have been reported in other advanced countries around the world. Indeed, Leadpile (2006) predicted that e-commerce sales around the world will likely surpass the \$1 trillion mark by 2012. Against the backdrop of the popularity of IEBT, it is not surprising that several researchers have investigated and continue to study the adoption or acceptance of such technologies in differing contexts and locations (Farhoomand *et al.*, 2000; Sadowski *et al.*, 2002; Zhu *et al.*, 2006; Wymer and Regan, 2005).

Admittedly, there are salient issues that need to be taken into consideration as the findings across contexts are disseminated. Put differently, issues considered vital in one setting may not be so in others (Farhoomand *et al.*, 2000; Gibbs and Kraemer, 2004; Lefebvre *et al.*, 2005). This current study aims at presenting empirical insights related to the acceptance of IEBT by SMEs based in a region of Canada: the Atlantic Provinces. It is hoped that by focusing attention on this particular region, concerns specific to this context will be identified and discussed accordingly.

The Atlantic region of Canada was primarily chosen for illustrative purposes and for the fact that it apparently lags behind the rest of the country on a variety of issues, including the use of the internet for business and commerce, population density, gross domestic product (GDP), and communications infrastructure (Industry Canada, 2001, 2010; Statistics Canada, 2006; *The Canada Year Book*, 2010). According to the Canada Year Book (2010), internet access from multiple locations, including businesses and public places in the Atlantic Provinces (e.g. Nova Scotia and New Brunswick) in 2009 is lower than those of other larger Provinces (e.g. Ontario and British Columbia). For example, the percentage of internet use by individuals in 2009 in Nova Scotia, New Brunswick, Ontario, and British Columbia are 76.3 percent, 73.2 percent, 81 percent, and 85.4 percent, respectively (*The Canada Year Book*, 2010). With respect to population density, communications infrastructure, gross domestic product, (GDP),

and other related socio-economic measures, the information in *The Canada Year Book* (2010) indicated marked differences between the Atlantic Provinces and the more prosperous parts of Canada on such indicators.

This is motivated by three concerns. First, it seeks to add to previous studies that investigated similar concepts in Canada. Some of the past efforts included the works of Iacovou *et al.* (1995), Raymond and Bergeron (1996), and Chwelos *et al.* (2001) who focused on the adoption of interorganizational systems (IOS) (such technologies are now linked to the internet) (Turban *et al.*, 2010). Iacovou *et al.* (1995) looked at the influence of perceived benefits, organizational readiness, and external pressure on interorganizational information systems (IS) in Canadian SMEs. Their findings indicated that such factors were relevant to the successful adoption of such systems. Raymond and Bergeron (1996) concluded that organizational support is needed for SMEs to benefit from business technologies. Chwelos *et al.* (2001) examined the impact of perceived benefits, organizational readiness, and external pressure on IOS acceptance in SMEs located in western parts of the country. They found the three factors to be significant predictors of the intent to adopt such technologies; as well, their study showed that external pressure and organizational readiness were more important than perceived benefits.

Recently, other researchers have focused on IEBT specifically. For instance, Raymond (2001) surveyed 54 Canadian businesses and found competitive pressure, influences from business partners, owner's experience with IS, nature of the business, and the relative advantage of technology, positively influenced web site implementations. Lefebvrea *et al.* (2005) and Raymond and Bergeron (2008) examined the dynamics of e-commerce adoption in manufacturing SMEs in Canada. They noted that the pattern of adoption was evolutionary in nature. Wade *et al.* (2004, p. 336) studied the net impact of e-commerce on SME performance and concluded "that business value can be significantly enhanced by the adoption of internet business solutions." De Guinea *et al.* (2005) showed that managerial support is crucial for IS effectiveness in Canadian's SMEs. Noce and Peters (2006) studied the barriers to e-commerce adoption in Canadian businesses over time. They concluded that barriers to IEBT acceptance in the country, which included external influence and lack of skills, are changing across businesses (large and SME), and policies aimed at encouraging e-commerce adoption should target firm size and industry sector. They noted that the unsuitability of products and services to online transactions was the most important barrier. Hadaya (2006) showed that a business's past experience with e-commerce and its business relationships affect its future use of electronic engagements; he also showed that the complexity of IEBT is negatively related to the future use of such technologies. Martin and Milway (2007) researched the business value of ICT products in SMEs. Davis and Vladica (2006) reported on the distribution and use of IEBT in Maritime Canada. This present research intends to complement these earlier studies; at the same time, it seeks to present current information on IEBT acceptance.

Second, it is important to pay attention to SMEs because of their crucial importance to economic development of countries around the world. According to the Net Impact Study Canada (2002), Canadian SMEs deliver 60 percent of Canada's economic output. The Conference Board of Canada (2009, p. 4) noted that "In Canada, close to 97 percent of our estimated 2.4 million registered businesses are SMEs (having fewer than 500 employees) employing over 55 percent of the [labor] force." Statistics Canada (2006), generally defines SMEs as firms with fewer than 500 employees. Moreover, it is important not to conflate IS adoption issues in both large firms and SMEs because the

challenges confronting each differ significantly (Barua *et al.* 2001; Thong *et al.*, 1996). By the same token, Noce and Peters (2006) highlighted that such differences existed among Canadian businesses with respect to e-commerce adoption barriers.

Third, this research aims at contributing to the discussion as to what causes Canadian SMEs to be reticent about adopting IEBT in their operations. The Net Impact Study highlighted the seriousness of the issue by noting that:

A lukewarm SME response to IBS adoption may weaken any national strategy to bolster Canada's international competitiveness. The challenge for industry leaders and policy makers is to bring lagging SMEs online and deepen the capabilities of those already online. The cost of inaction is to have this vital sector of the economy stall at current levels of engagement while other nations catch up or increase their lead (Net Impact Study Canada, 2004, p. 1).

This research study does not claim to have all the reasons as to why some Canadian's SMEs tend to have a discouraging outlook towards IEBT acceptance. The aim of this present endeavor is to present an empirical insight that could benefit practitioners and policy makers as they develop guidelines on how to encourage and motivate widespread adoption of IEBT in Canada. Specifically, the questions that this research is designed to answer as follows:

- What influence do selected contingent factors have on the acceptance of IEBT by SMEs based in Atlantic Canada?
- What is the relative importance of each factor in the adoption process?

This research drew from the technology-organization-environment (TOE) (Tornatzky and Fleischer, 1990), which other IS researchers (e.g. Iacovou *et al.*, 1995; Chwelos *et al.*, 2001; Raymond, 2001; Scupola, 2003; Gibbs and Kraemer, 2004; Kuan and Chau, 2001; Al-Qirim, 2007; Chong *et al.*, 2009; Li *et al.*, 2010) have used in comparable studies.

2. Background information and hypotheses development

2.1 Theoretical foundation

The technology-organization-environment (TOE) framework posits that the adoption of innovations depends on organizational, environmental, and technological factors. Essentially, the TOE model is an integrative schema incorporating characteristics of the technology, contingent organizational factors, and elements from the macro-environment (Tornatzky and Fleischer, 1990; Tornatzky and Klein, 1982; Li *et al.*, 2010). Several studies that used the TOE have incorporated such variables as perceived benefits, top management commitment/support, organizational IS competence (akin to organizational readiness in other IS studies), external pressure, IS vendor support, and financial resources availability. Importantly, the acceptance of IEBT by SMEs is viewed from the perspective of innovation. According to Damanpour (1992), an innovation is described as something that is "new to the adopting organization."

Researchers found almost all the aforementioned factors to be crucial in the acceptance of IEBT and related technologies by SMEs (e.g. Gatignon and Robertson, 1989; Iacovou *et al.*, 1995; Thong *et al.*, 1996; Premkumar and Roberts, 1999; Chwelos *et al.*, 2001; Lawson *et al.*, 2003; Scupola, 2003; Pearson and Grandon, 2004; Al-Qirim, 2007). This information provides ample reason for their inclusion in this research; however, it is worth mentioning that they are offered as illustrative rather than exhaustive examples. In the TOE framework, the dependent variable can be adoption/acceptance, receptivity, business performance, business value, or a

combination of other relevant variables (Kendall *et al.*, 2001; Love and Irani, 2004; Wade *et al.*, 2004; Van der Deen, 2005; Davis and Vladica, 2006). In this study, the dependent variable is acceptance, which was operationalized with measures related to the frequency, extent of use, and criticality of the use of such technologies in business operations. Other prior studies (e.g. Mustafa and Beaumont, 2005; Chong and Pervan, 2007) have used a similar conceptualization to facilitate the emergence of deeper insight. Additionally, researchers such as Chau and Hui (2001) have argued for influences arising from relevant independent factors to be incorporated to enhance insight.

2.2 Hypotheses formulation

The proposed research framework and the formulated hypotheses are highlighted in Figure 1. Of note is the fact that the research framework builds on similar conceptualizations in the extant IS literature (e.g. Iacovou *et al.*, 1995; Chau and Hui, 2001; Chwelos *et al.*, 2001).

“Perceived benefits” refers to the relative advantage that IEBT can provide the adopting organization (Iacovou *et al.*, 1995). When users recognize that an innovation can offer advantages over existing practices and systems, it is to be expected that the adoption of such an innovation will be positively encouraged (Rogers, 2003). Examples of indirect and direct benefits to be gained from the acceptance and use of IEBT include

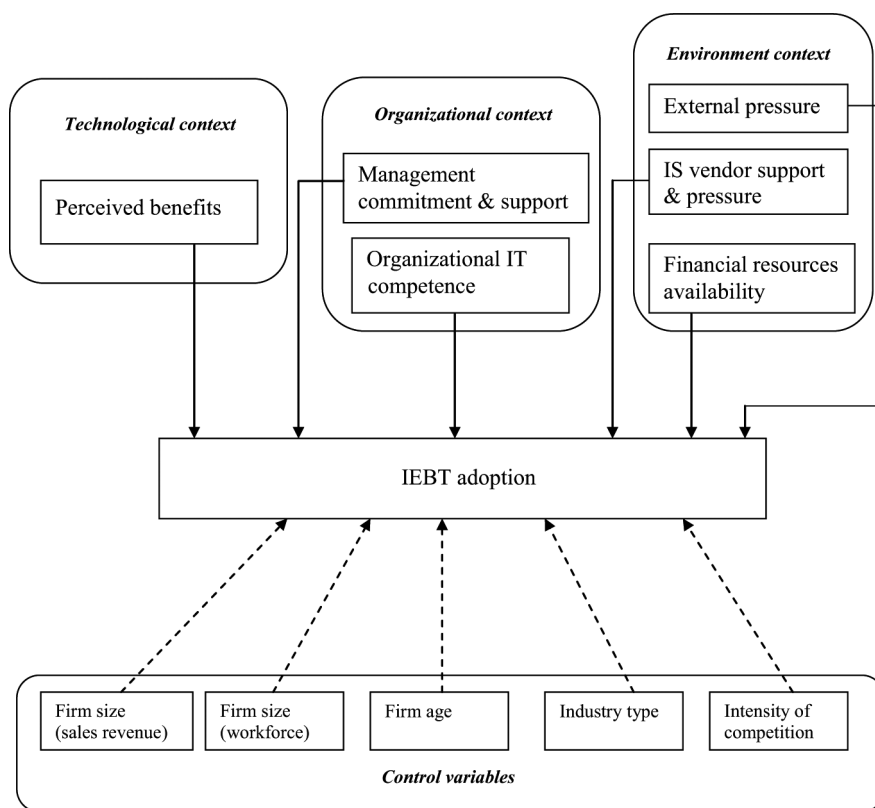


Figure 1.
The proposed research
framework

inter alia improved relationships with customers and partners, enhanced revenue generation, and increased operational efficiency. Researchers including (Iacovou *et al.*, 1995; Premkumar and Roberts, 1999; Chwelos *et al.*, 2001; Mehrstens *et al.*, 2001; Chau and Jim, 2002; Gunasekaran and Ngai, 2005; Al-Qirim, 2007; Chong and Pervan, 2007) have reported that perceived benefits (relative advantage) is a strong predictor of IEBT and related technologies in SMEs. Thus, it is hypothesized that:

H1. The perceived benefits of IEBT will positively influence the acceptance of such technologies by SMEs.

“Organizational IS competence” refers to the level of technical expertise available to the organization. The more knowledge an organization has about technological innovations, the more likely it will be to adopt technological innovations (Raymond, 2001; Zhu *et al.*, 2006). However, SMEs and micro businesses tend to not have sufficient knowledge of IT and e-business (Thong and Yap, 1995; Thong *et al.*, 1996; Jutla *et al.*, 1999; Riemenschneider and McKinney, 1999). Chircu and Kauffman (2000) found that inability to acquire skill and expertise in new technologies, and a lack of training and education form significant barriers to the adoption of EC systems. Also, Thong and Yap (1995) found a lack of computer literacy among SME owners and a lack of knowledge regarding the benefits of IS use is an inhibitor to IS adoption in small businesses. In general, SMEs that possess relevant IT expertise are more likely to accept innovations as they have a better understanding of the benefits of such innovations than if such competences were lacking (Cragg and King, 1993; Chwelos *et al.*, 2001; Mehrstens *et al.*, 2001; Raymond, 2001; Caldeira and Ward, 2002; Pflughoeft *et al.*, 2003). Indeed, Riemenschneider and McKinney (1999) and Caldeira and Ward (2002) concluded that for SMEs to successfully adopt IEBT, their executives and employees must have a reasonable knowledge of the relevance of IS in business operations. Thus, it is predicted that:

H2a. Organizational IS competence will positively influence the acceptance of such technologies by SMEs.

“Top management commitment/support” refers to the involvement, enthusiasm, motivation, and encouragement provided by management towards the acceptance of IS innovations, including IEBT (Thong *et al.*, 1996; Chatterjee *et al.*, 2002; Al-Qirim, 2007; Ramdani *et al.*, 2009). In fact, Jeyaraj *et al.* (2006) found top management support to be one of the best predictors of organizational adoption of IS innovations. When top managers in any organization understand the relevance of computer technology, they tend to play a crucial role in influencing other organizational members to accept it; furthermore, they also commit resources to its adoption (Thong *et al.*, 1996; Premkumar and Roberts, 1999). Conversely, where management support is low or unavailable, technology acceptance tends to be placed on the back-burner in terms of organizational priorities (e.g. Igbaria *et al.*, 1997). Past studies have indicated that management support and commitment generally boded well for the acceptance of technological innovations in organizations, including SMEs (e.g. Iacovou *et al.*, 1995; Premkumar and Roberts, 1999; Beatty *et al.*, 2001; Chwelos *et al.*, 2001; Grandon and Pearson, 2004; Al-Qirim, 2007; Ramdani *et al.*, 2009). Thus, it is predicted that:

H2b. Higher levels of top management support/commitment will positively influence the acceptance of such technologies by SMEs.

External pressure refers to the influences that an SME receives from sources external to it. The literature identifies three main sources of external pressure as follows: competitive pressure, supplier's pressure and customer's pressure (Hart and Saunders, 1998; Chau and Jim, 2002; Kula and Tatoglu, 2003; Chong *et al.*, 2009). Competitive pressure does impact the adoption of IS innovations and has been reported to be one of the better predictors of IS innovations in business (large and SMEs) (Poon and Swatman, 1999; Hart and Saunders, 1998; Raymond, 2001; Gatignon and Robertson, 1989; Looi, 2005; Jeyaraj *et al.*, 2006; Chong and Pervan, 2007; Huang *et al.*, 2008). Regarding business partners' pressure, Raymond (2001), and Hadaya (2006) showed that the deployment of IEFT and related technologies improves commercial transactions and relationships between businesses and their partners. As such, a business may accept an IS innovation because its partners are using it and/or demand it. Hart and Saunders (1998), Chau and Jim (2002), and Mehrrens *et al.* (2001) found that business partner influence is a significant predictor of the acceptance of IS innovations. However, others did not confirm this relationship (e.g. Chau and Hui, 2001; Windrum and de Berranger, 2004). Likewise, Carmichael *et al.* (2000) suggest that the key driver for SMEs to innovate is customer feedback and demand. Also, Kula and Tatoglu (2003) indicated that most SMEs innovate only when they come under pressure from their clients. Thus, it is predicted that:

H3a. External pressure to adopt IEFT will positively influence the acceptance of such technologies by SMEs.

IS vendor support refers to the support for implementing and using IT applications that a business obtains from external sources of technical expertise (Thong *et al.*, 1996; Premkumar and Roberts, 1999; Rogers, 2003). According to Attewell (1992) business organizations (large and small) tend to postpone technology adoption due to a lack of expertise and knowledge. In general, IS vendors can help businesses to bridge knowledge gaps related to IS innovation acquisitions. While some studies have found the factor of IS vendor to be an important factor in the adoption of IEFT and related technologies (e.g. Gatignon and Robertson, 1989; Doolin *et al.*, 2003; de Guinea *et al.*, 2005), others (Premkumar and Roberts, 1999; Al-Qirim, 2007; Ramdani *et al.*, 2009) did not find support for such a proposition. *Ceteris paribus*, IS vendors can act as change agents during the adoption of IS innovations especially for organizations lacking in such knowledge (Attewell, 1992; Rogers, 2003). In fact, it has been noted that SMEs rely on such external sources of expertise during IEFT implementations (Poon and Swatman, 1999; Al-Qirim, 2007). Additionally, IS vendors have been known to add value to the business planning of SMEs (McDonagh and Prothero, 2000). To that end, a lack of external technical support can inhibit e-commerce adoption in small-sized businesses (Scupola, 2003; Simpson and Doherty, 2004). Thus, it is predicted that:

H3b. IS vendors support will positively influence the acceptance of such technologies by SMEs.

According to several IS researchers, including Thong *et al.* (1996) and Chapman *et al.* (2000), a lack of financial resources is one of the distinguishing characteristics setting smaller businesses apart from larger enterprises. The apparent weak financial position of SMEs and the resistance to invest in complex IS have been reported as major barriers in some studies (Tuunainen, 1998; Chapman *et al.*, 2000; Love *et al.*, 2001). Admittedly, in some scenarios, the reticence to adopt innovation is beyond the control

of SMEs. For example, Reynolds *et al.* (1994) and Poon *et al.* (1996) implied that small-sized businesses do encounter difficulties with obtaining finance, and this unfavorable situation may set back their efforts to adopt needed IS innovations. Similarly, Walczuch *et al.* (2000), Tan and Wu (2003), Lawson *et al.* (2003), and Pearson and Grandon (2004) showed that financial matters are vitally important to owners and managers and such issues often drive adoption of IS in small businesses. However, others (e.g. Cragg *et al.*, 2001; Dongen *et al.*, 2002; Simpson and Doherty, 2004) found that a lack of financial resources was not a sufficient factor to set back IEBT adoption in SMEs. The foregoing discussion permits the prediction that:

H3c. The availability of financial support will positively influence the acceptance of such technologies by SMEs.

2.3 The control variables

The control variables used for this study are as follows: industry type, firm size, firm age, and intensity of competition in the business environment. The industry type or sector in which a business operates may influence its ability to adopt IS innovations, including IEBT (Bodorick *et al.*, 2002; Drew, 2003; Levenburg *et al.*, 2006; Jeyaraj *et al.*, 2006; Li *et al.*, 2010); however, the study by Chatterjee *et al.* (2002) and Teo (2007) did not affirm this view. It has been suggested that service businesses are more predisposed towards using the internet for business activities than manufacturing enterprises (Drew, 2003; Goode and Stevens, 2000). Firm size has been found to positively predict the adoption of IS (Jeyaraj *et al.*, 2006; Al-Qirim, 2007; Teo, 2007; Huang *et al.*, 2008; Li *et al.*, 2010); at the same time, other IS researchers have failed to confirm this relationship (e.g. Goode and Stevens, 2000; Gibbs and Kraemer, 2004).

Simpson and Doherty (2004, p. 320) commented that “the older the SME, the less likely they were to use e-commerce.” Similarly, Lai (1994) found that firm age was significantly associated with success of computer use and adoption. However, researchers such as Chatterjee *et al.* (2002) and Li *et al.* (2010) found firm age to be insignificant in the assimilation of IEBT. Businesses experiencing more competition in their industries will be better poised in responding to change by adopting relevant IS innovations (Chwelos *et al.*, 2001; Raymond, 2001; Hadaya, 2006; Al-Qirim, 2007). Others did not find support for this claim in the context of SMEs (e.g. Drew, 2003).

3. Research methodology

3.1 Data collection

A survey method was used to test the research framework. Data was collected in the four Atlantic Provinces: Nova Scotia, Newfoundland and Labrador, Prince Edward Island, and New Brunswick. In selecting the participating SMEs, a stratified random sampling using telephone directories (Yellow Pages) in the four provinces was used. Other studies investigating comparable issues have used such an approach (e.g. Love and Irani, 2004; Mustafa and Beaumont, 2005). The study considered a wide range of industries for inclusion. Given that the study's unit of analysis of this study was at the organization level, key organizational informants including senior executives and owners of SMEs were contacted. It was ensured that each received a packet containing a cover letter, a questionnaire, and a self-addressed, stamped envelope.

A pilot test was initially conducted to enhance the study's content validity. A total of 18 knowledgeable individuals (four faculty, four local SMEs executives, and ten university students) participated in the pilot test with an initial draft of the

questionnaire. Comments from the pilot test helped to improve the quality of the final questionnaire that was mailed out. Importantly, IEBT was clearly defined in the cover letter with examples of such technologies provided. A total of 2,200 questionnaires were mailed out. The sample population was determined by the understanding that a sampling frame that is properly selected and large enough will increase the response rate (Iacobucci and Churchill, 2009). Moreover, comparable studies (e.g. Gibbs and Kraemer, 2004) have sampled a similar number of SMEs. Data collection took place between November 2007 and March 2008. Respondents were assured that their individual responses would be treated with anonymity and confidentiality. Participation in the study was voluntary.

The majority of the measures used in the study were taken from previously validated sources (e.g. Iacovou *et al.*, 1995; Igbaria *et al.*, 1997; Premkumar and Roberts, 1999; Grandon and Pearson, 2004; Chong and Pervan, 2007) and a few adapted from the literature. The measurement items were anchored on a seven-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (7) in which participants were asked to indicate an appropriate response. Table I highlights the constructs’ descriptive statistics. A full list of the measures used is provided in the Appendix. The Cronbach alpha and composite reliability for each dimension exceeds the 0.7 limit, recommended by Nunnally (1978) to indicate a reasonably high reliability of the research measures and constructs. As well, the factor loading of each measurement item is adequate in line with recommended threshold values (Nunnally, 1978; Hair *et al.*, 1998).

The control variables were assessed as follows: Firm size was measured by two sub-items, i.e. annual sales revenue and workforce. Firm age was assessed by the length of time the SME had been in existence. Industry sector was delineated as manufacturing, services, and others (e.g. not-for-profit). The intensity of competition in the business was assessed on a Likert scale using “low”, “medium”, “high”, and “don’t know”.

3.2 Survey results

Of the total number of questionnaires mailed, 192 questionnaires were undelivered. 237 responses were received, of which, 214 were considered valid. The unusable 23 responses included questionnaires with a high percentage of missing entries and those indicating non-adoption of any IEBT. The research’s effective response rate is 11.8 percent, which is considered good for an exploratory study such as this one. Table II shows the participants’ demographics. The participants’ average work experience was 13.4 years (s.d. = 11.01). The workforce ranged from 1 to 500 employees, with a median of six employees. The intensity of competition in their businesses is provided as follows: Low (frequency [n] = 13; 6.1 percent), Medium (n = 59; 27.6 percent), High (n = 138; 64.5 percent), and Do not know (n = 4; 1.9 percent). The other profiles of the responding SMEs are highlighted in Table III, and the distribution of the types of IEBT in use in the sampled SMEs is shown in Figure 2.

It is worth noting that the problem of common method bias exists for studies that used single informants. The procedural remedies for controlling common method biases were followed (Podsakoff *et al.*, 2003). First, to increase the study’s validity, clear and concise questions were used in the questionnaire. Second, to reduce apprehension, respondents’ anonymity was assured. Third, a statistical procedure, i.e. the Harmon one-factor test, was used to assess if such biases were a problem in our sample (Podsakoff *et al.*, 2003). The test results showed that several factors with eigenvalues greater than one are present in our data. As well, the most covariance explained by one

Construct	Items	Mean	SD	Factor loading	Cronbach's alpha	Composite reliability	AVE
Perceived benefits	PB1	4.34	1.49	0.882	0.907	0.929	0.789
	PB2	4.16	1.52	0.881			
	PB3	3.84	1.54	0.871			
	PB4	4.26	1.44	0.884			
	PB5	4.17	1.50	0.816			
	PB6	4.02	1.48	0.783			
Management commitment/support	MT1	4.46	1.61	0.939	0.945	0.961	0.859
	MT2	4.49	1.68	0.934			
	MT3	4.06	1.63	0.902			
	MT4	4.02	1.69	0.933			
Organizational IT competence	OR1	4.37	1.50	0.907	0.907	0.935	0.784
	OR2	4.39	1.44	0.949			
	OR3	4.08	1.52	0.876			
	OR4	4.32	1.61	0.804			
External pressure	EX1	4.03	1.47	0.825	0.897	0.923	0.662
	EX2	3.72	1.36	0.839			
	EX3	3.00	1.57	0.725			
	EX4	3.56	1.47	0.739			
	EX5	3.92	1.53	0.853			
	EX6	3.11	1.55	0.889			
IS vendor support	IV1	2.62	1.51	0.973	0.979	0.986	0.959
	IV2	2.63	1.55	0.969			
	IV3	2.71	1.52	0.997			
Financial support availability	FN1	2.26	1.58	0.751	0.764	0.868	0.692
	FN2	3.31	1.53	0.819			
	FN3	3.04	1.14	0.991			
IEBT adoption	IA1	5.36	1.34	0.782	0.793	0.864	0.614
	IA2	5.37	1.28	0.810			
	IA3	3.92	1.47	0.721			
	IA4	4.00	1.41	0.818			

Table I.
The constructs with their descriptive statistics and reliability values

factor in our data is 38.7 percent indicating that common method variance is not a problem for the data. Also, a test for non-response bias was conducted by comparing the responses of early and late respondents (Iacobucci and Churchill, 2009). Chi-square (χ^2) test was used to compare the sampled firm size, annual revenue, and industry type. The results of the Chi-square tests (significant at $p < 0.05$) showed there were no significant differences along these key characteristics.

4. Data analysis and results

The Partial Least Squares (PLS) technique, which uses a principal component-based approach to estimation, was used for data analysis. The PLS approach is suitable for validating predictive models (Chin, 1998). PLS analysis involves two measurements models, i.e. the assessment of the measurement model and the assessment of the structural model. The specific tool used was SmartPLS 2.0, which was created by Ringle *et al.* (2005).

Table II.
Demographics of the
respondents

Profile	Frequency	Percentage (%)
<i>Gender</i>		
Male	125	58.4
Female	85	39.7
Missing	4	1.9
<i>Age</i>		
Less than 20 years	4	1.9
21-30	26	12.1
31-40	30	14.0
41-50	78	36.4
51-60	57	26.6
60 years and above	19	8.9
<i>Education</i>		
Primary education	7	3.3
Secondary education	40	18.7
College/Bachelor's education	115	53.7
Post-graduate degree	44	20.6
Other	8	3.7
<i>Job title</i>		
Owner/Proprietor	84	39.3
VP, Director	41	19.2
Business Manager, Accountant	67	31.3
Other	22	10.2

4.1 The assessment of the measurement model

The first activity in the measurement model is to assess the measurement reliability and validity by performing a confirmatory factor analysis. The summarized results, which indicated that study's measures are adequate, is presented in Table I. Information about the average variance extracted (AVE), which ranged from 0.61 to 0.96 is also provided. Discriminant validity ascertains whether each construct is unidimensional or unique. To assess discriminant validity, the value of the AVE should be at least 0.50, and the square root of the (AVE) of all constructs should be larger than all other cross-correlations (Fornell and Larcker, 1981). Table IV shows that in no case was any correlation between the constructs greater than the squared root of AVE (the principal diagonal element). Thus, the measurement items used for this study demonstrate good convergent and discriminant validities.

4.2 The assessment of the structural model

Having established the validity of the measurement model, attention is turned to the structural model analysis. In this aspect, information related to the path coefficients (β) and the squared R (R^2) in the model are presented. The strength of the relationship is indicated by the β while the R^2 highlights the percentage of variance in the model and gives an indication of its predictive power. The path significance levels (t -values) are estimated by the bootstrapping procedure. The SmartPLS 2.0 results for the β s and the R^2 are shown in Figure 3.

Three out of the six hypothesized associations were supported; $H1$ was confirmed to show that IEBT's perceived benefits will lead to greater acceptance of such

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Profile	Frequency	Percentage (%)
<i>Business type</i>		
Adverting, marketing	19	8.9
Manufacturing	41	19.2
Retail, wholesale	35	16.4
Auto dealership, auto repairs	14	6.5
Construction	6	2.8
Design outfit, decorator	8	3.7
Education, driving school	5	2.3
Hotel, hospitality	10	4.7
Insurance, accounting firms	21	9.8
Real estate, legal firm	12	5.6
Other (e.g. not-for-profit)	43	20.1
<i>Annual sales revenues Canadian (C\$)^a</i>		
Less C\$500,000	102	47.7
C\$500,000-C\$ 1.0 million	48	22.4
C\$ 1.1-C\$5.0 million	38	17.8
C\$ 5.1-C\$ 10.0 million	9	4.2
C\$ 10.1-C\$ 20.0 million	11	5.1
C\$ 20.1-C\$50.0 million	6	2.8
<i>Workforce</i>		
Less than 50 employees	175	81.8
51-99 employees	23	10.7
100-500 employees	11	5.1
Missing data	5	2.3
<i>Firm age</i>		
Less than 10 years	75	35
11-20 years	36	16.8
21-50 years	74	34.6
50 years and above	25	11.7
Missing data	4	1.9

Table III.
Profile of the
participating SMEs

Note: ^a C\$ = Canadian dollar

technologies. *H2a* was confirmed to support the notion that management commitment/support is crucial in encouraging IEBT acceptance in SMEs. The data analysis supported *H3a*, which predicted that external pressure enhances IEBT acceptance. The data did not provide support for *H2b*, *H3bc*, and *H3c*. Contrary to the prediction made in *H2b*, the organizational IT competence of the sampled SMEs did not appear to facilitate their acceptance of IEBT. Similarly, predictions made about the relevance of IS vendor support and the availability of financial support were unsupported by the data.

A summary of the results is presented in Table V. All the variables together with the control variables explain 51 percent of the variance in the dependent construct. This information indicates that the proposed research conceptualization possesses adequate predictive power and is successful in explaining the acceptance of IEBT among the sampled SMEs. It is worth noting that none of the study's control variables – firm size, intensity of competition, firm age, and industry sector – were found to have a significant relationship with the dependent construct. Their effects were

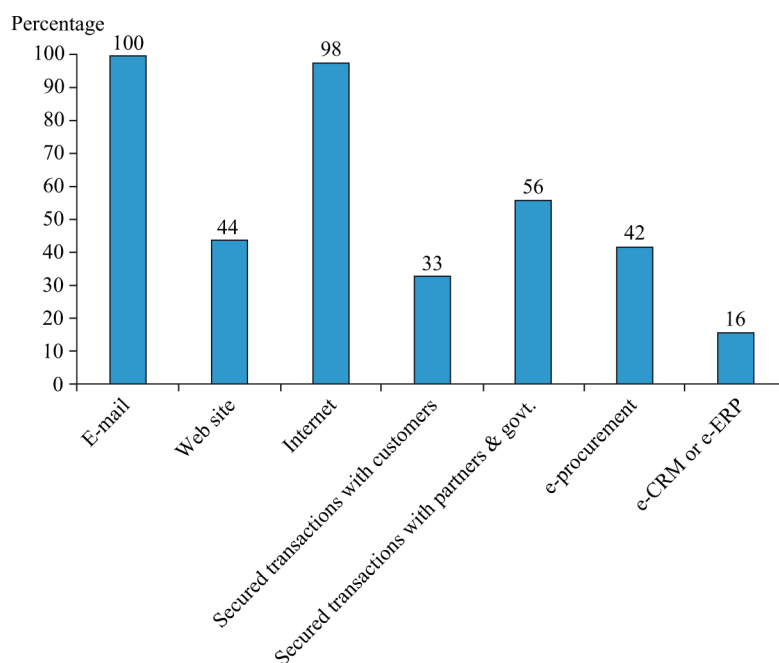


Figure 2.
The distribution of the
IEBT in use in the
sampled SMEs

Construct	1	2	3	4	5	6	7
1: External	<i>0.8882</i>						
2: IEBT	0.579651	<i>0.7836</i>					
3: FinAva	0.355640	0.211812	<i>0.8319</i>				
4: Managsupp	0.476416	0.574456	0.331299	<i>0.9268</i>			
5: OrgITcomp	0.495021	0.469186	0.295565	0.687833	<i>0.8854</i>		
6: PercdBen	0.581569	0.645442	0.361976	0.726088	0.676539	<i>0.8883</i>	
7: Vendor	0.574538	0.314937	0.469918	0.259079	0.205722	0.316799	<i>0.9793</i>

Notes: The italic fonts in the leading diagonals are the square root of AVEs; off-diagonal elements are correlations among constructs; External = External pressure, IEBT = IEBT adoption, FinAva = Financial support availability, Managsupp = Management commitment and support, OrgITcomp = Organizational IT competence, PercdBen = Perceived benefits, Vendor = IS vendor support

Table IV.
Inter-construct
correlations and the
square root of AVE

marginally low to underscore their insignificance in this research conceptualization. Researchers such as Huang *et al.* (2008) and Li *et al.* (2010) have indicated that some of the control factors may, in fact, have no pertinence in the adoption of IS innovations. Nonetheless, the tested model with the control variables only indicated that SMEs with better financial resources are able to adopt IEBT more than counterparts with less resource. Others have provided a similar observation in their studies (Cragg and King, 1993; Beatty *et al.*, 2001; Daniel and Grimshaw, 2002; Li *et al.*, 2010).

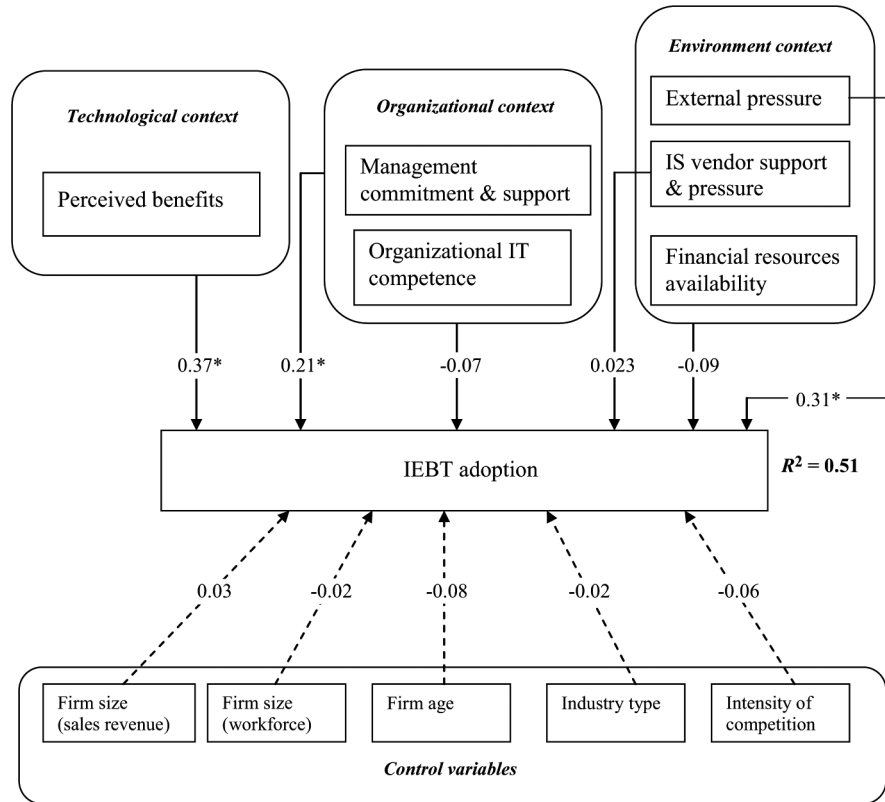


Figure 3.
The results of the structural model analysis

Note: *Denotes significance at the 0.01 level

Variable	Model with control only (β)	Model without controls (β)	Model with all factors (β)	Result
Perceived benefits		0.375	0.365*	Supported
Organizational IT competence		-0.073	-0.069	Not supported
Management commitment and support		0.212	0.207*	Supported
External pressure		0.312	0.306*	Supported
IS vendor support		0.018	0.023	Not supported
Financial support availability		-0.099	-0.090	Not supported
IEBT adoption	$R^2 = 0.141$	$R^2 = 0.507$	$R^2 = 0.514$	
Firm size (annual sale)	0.263**		0.029	
Firm size (workforce)	-0.023		-0.016	
Industry sector	0.065		-0.016	
Firm age	-0.047		-0.076	
Industry competition	-0.034		-0.056	

Table V.
Summary of the results

Notes: * Significant at $p < 0.001$; ** significant at $p < 0.05$

5. Discussion

This study used the TOE framework to investigate factors influencing the acceptance of IEBT in SMEs based in Atlantic Canada. The data analysis confirmed the significance of perceived benefits of IEBT in the adoption process. This result can be interpreted to mean that SMEs' executives in the region are not ignorant about the advantages and benefits of IEBT. As such, the acceptance of IEBT is likely to be positively encouraged by this understanding. The data analysis revealed that perceived benefits emerged as the most salient factor for IEBT acceptance in comparison with the other variables used in the study. To that end, this finding supports earlier studies that have signified the critical importance of perceived benefits in the adoption processes of technological innovations, including IEBT in SMEs (e.g. Iacovou *et al.*, 1995; Chwelos *et al.*, 2001; Mehrtens *et al.*, 2001; Premkumar and Roberts, 1999; Mehrtens *et al.*, 2001; Kuan and Chau, 2001; Gibbs and Kraemer, 2004; Grandon and Pearson, 2004; Looi, 2005).

The acceptance levels of IEBT were higher where management commitment/support was higher. The views of the participating SMEs seem to be indicating that top executive support is considered crucial for IEBT to be accepted in the adopting organization. This finding is consistent with prior IS studies that have suggested that management commitment, enthusiasm, and support is positively associated with the successful acceptance of IEBT and related technologies in small businesses (e.g. Thong and Yap, 1995; Thong *et al.*, 1996; Igarria *et al.*, 1997; Teo *et al.*, 1997; Premkumar and Roberts, 1999; Raymond, 2001; Chatterjee *et al.*, 2002; Al-Qirim, 2007).

External pressure was also found to be an important factor positively influencing the acceptance of IEBT in the SMEs. This factor was second to perceived benefits as the most important predictor of IEBT acceptance in the region. The data are indicating that as the use of IEBT gain in popularity, it is to be expected that SMEs will succumb to the pressure from their customers, partners, and competitors to adopt such innovations. Other previous studies have highlighted the pertinence of such influences in the adoption of technological innovations, inclusion IEBT in SMEs (Hart and Saunders, 1998; Raymond, 2001; Hadaya, 2006; Carmichael *et al.*, 2000; Kula and Tatoglu, 2003; Cragg and King, 1993; Premkumar and Roberts, 1999; Mehrtens *et al.*, 2001; Grandon and Pearson, 2004). Thus, the finding consolidates the body of knowledge in the area.

The organizational IT competence of the sampled SMEs was not adequate enough to influence their acceptance of IEBT. To some degree, this result corroborates the viewpoint suggesting that the levels of technical expertise available to Canadian small businesses are not adequate (Annis *et al.*, 2005; Noce and Peters, 2006; Martin and Milway, 2007). For example, Martin and Milway (2007) noted that one of the biggest problems facing the growth of ICT use among SMEs is a poor awareness level of IS issues that are projected by owners and employees of small businesses. Further to this, a closer look at the distribution of IEBT in use in the study (Figure 3) shows that relatively easy to use technologies such as e-mail were more widely accepted than such complex systems as e-CRM and e-ERP; this does not seem to indicate a high level of organizational IS competence or readiness perhaps due to a lack of expertise. Feedback from some of this study's participants indicated that online business transaction is unsuitable for their business activities; other respondents commented that they simply have no skills to implement top end IEBT products. Having said that, previous studies have also shown that a lack of adequate IT/IEBT expertise in the organization as well vision about e-business are barriers to the spread of online business engagements (Thong and Yap, 1995; Scupola, 2003; Simpson and Doherty, 2004).

Although prior studies have shown that external support from IS vendors boded well for the adoption of technological innovations, including IEBT in small organizations (Gatignon and Robertson, 1989; Doolin *et al.*, 2003; de Guinea *et al.*, 2005; Thong *et al.*, 1996; Poon and Swatman, 1999; Al-Qirim, 2007), the study's finding did not provide support for the claim. Two explanations are offered as plausible causes. First, it is possible that this study's research measurement items, which is different from those used in Thong *et al.* (1996) and de Guinea *et al.* (2005) might have influenced the result. However, other studies (e.g. Premkumar and Roberts, 1999; Al-Qirim, 2007; Ramdani *et al.*, 2009) that used comparable measurement items to the ones used herein have offered similar insights as what is being noted here. Second, contextual imperatives might have impacted the result in some ways. It is possible that the sampled SMEs may not have a favorable view of IS vendors in their contexts; alternatively, local IS vendors may be having difficulties in meeting the specific needs of SMEs. For instance, the head of one of the local IS vendor organizations notes "we need to focus on small and medium-sized business and we need to a better job at exploring what the solutions are and then we must implement them" (Grachnik, 2004). The same source also suggested that a better relationship between IS vendors and SMEs is the key to advancing the booming e-economy in the country. On the basis of this study's empirical evidence and the insight about the IS vendors' commitment, it would suffice to suggest that the levels of available IS vendor support in the region (and elsewhere in the country) may not be sufficient to influence the acceptance of IEBT in small businesses.

The studies by Scupola (2003) and Love *et al.* (2001) implied that a lack of financial resources and investment is a barrier to the deployment and implementation of IEBT in SMEs. It is logical to expect that SMEs lacking in financial resources would have a need to source for funding as they consider implementing IEBT and related solutions (Walczuch *et al.*, 2000; Tan and Wu, 2003; Lawson *et al.*, 2003; Pearson and Grandon, 2004). However, in line with this study's objective and research design, the participating SMEs seemed to be indicating that needed support cannot be easily obtained from local financial institutions. Inadequacies such as this may not be conducive to the effort to get more businesses in the country to accept and use IEBT in their operations (Net Impact Study Canada, 2002, 2004). This foregoing insight however needs to be tempered as there are mixed feelings about the commitments of Canadian financial institutions towards SMEs in the country. For example, the head of Canadian Bankers Association disproved the notion suggesting that banks in the country "don't serve the small business market in Canada" well enough. On the other hand, a report from the Canadian Federation of Independent Business raises "questions as to whether [some major financial institutions in the country] have intentionally adopted a domestic strategy that focuses less importance on the SME market" (Lam, 2010). The discordance between the two parties, to some degree, lends support to this study's finding indicating that, at least, one party, i.e. SMEs do not believe that obtaining financial support for the purposes of IEBT-supported engagements is an easy exercise in the country.

5.1 Implication for research

This study offers both theoretical and practical implications. First, it provides support to the suitability and relevance of the TOE framework (Tornatzky and Fleischer, 1990) as a useful model for discussing the adoption/acceptance of IEBT and related technologies in business organizations across contexts. Second, the dependent variable, i.e. acceptance used in this study departs from prior research efforts that tend

to operationalize such constructs with a single item of "Use" (usage) or intention to use (e.g. Zhou, 2011; Weisberg *et al.*, 2011). The utilization of such singular items may obfuscate reality and has, in fact, been criticized for limiting insight (Legris *et al.*, 2003). In that respect, the measures used to operationalize IEBT acceptance here may be beneficial to others wishing to investigate comparable issues. Third, this research isolated the impact of control variables, which permits more useful conclusions to be made. This exercise has enabled the postulation that the uncovered findings were not due to the influences arising from other independent factors. Other researchers may consider doing likewise in comparable studies.

Fourth, this study offers empirical support to findings and observations regarding the factors that influence the adoption/acceptance of IEBT in SMEs. With regard the critical importance of perceived benefits of IEBT as a predictor or motivator for SMEs, the findings in this study is consistent with those reported elsewhere (e.g. Iacovou *et al.*, 1995; Premkumar and Roberts, 1999; Chwelos *et al.*, 2001; Mehrtens *et al.*, 2001; Chau and Jim, 2002; Gunasekaran and Ngai, 2005; Al-Qirim, 2007; Chong and Pervan, 2007). Regarding the pertinence of external pressure in the adoption of IEBT, this research's finding, which is similar to the views of other IS researchers (Premkumar and Roberts, 1999; Mehrtens *et al.*, 2001; Chwelos *et al.*, 2001; Grandon and Pearson, 2004), signified it as important. It also supports the notion that external pressure in the business environment generally increases overall rates of innovation adoption (Looi, 2005).

Fifth, this study's finding alongside results elsewhere in the extant literature (e.g. Premkumar and Roberts, 1999; Al-Qirim, 2007) somewhat raises the need to re-examine the factor of IS vendor support as a predictor of IEBT adoption. It might as well be that SME's executives and operators wishing to adopt IEBT and related technologies proceed with their intent to accept and use such systems with or without the support from external experts. Simpson and Doherty (2004) found that technical assistance for the implementation of IEBT in SMEs could come from other sources including knowledgeable friends and family. It is also possible that contextual imperatives specific to this research setting might have influenced the result obtained herein. Views in the other contexts may differ. More work is certainly expected in this area.

Sixth, with respect to prior studies conducted in Canada (e.g. Iacovou *et al.*, 1995; Chwelos *et al.*, 2001; Raymond, 2001; Raymond and Bergeron, 1996; De Guinea *et al.*, 2005; Davis and Vladica, 2006; Hadaya, 2006), this research affirms the views indicating that perceived benefits, external pressure, and management support are important predictors of technological innovations adoption in the country's small businesses. Further to this, this study's finding with respect to management support concurs with results in Iacovou *et al.* (1995), Raymond and Bergeron (1996), and De Guinea *et al.* (2005) to signify its importance for achieving IS success in Canadian SMEs. Likewise, the overall lack of awareness and knowledge of IS products/issues, inadequate IS vendor support, and access to financial support as implied elsewhere (e.g. Annis *et al.*, 2005; Martin and Milway, 2007), is supported by this study's findings. Also, the trend of IEBT adoption in Atlantic Canada's SMEs in this study compares to findings in Davis and Vladica (2006) that investigated adoption patterns in an Atlantic Province.

Seventh, this endeavor complements the emerging desire among some researchers to specifically focus on and bring into the limelight issues related to the adoption of IEBT and similar technologies in less endowed regions of advanced countries. For example, the studies by Premkumar and Roberts (1999), Scupola (2003), Grandon and Pearson (2004), and Simpson and Doherty (2004) focused on rural USA, Southern Italy,

the Yorkshire region of the UK, and Mid West region of the USA, respectively. Such targeted focus serves to enhance insight and theory development in the area. To that end, this current research has added useful knowledge to the literature with its perspectives of IEBS acceptance issues in the Atlantic region of Canada, which practitioners in comparable settings may find beneficial.

5.2 Implications for practice

This research with its focus on possible factors or issues that could serve to inhibit/enable the adoption of IEBS in SMEs in a less endowed part of Canada is welcoming and timely. Policy makers and industry leaders wishing to understand some of the reasons why certain SMEs in the country lag in the adoption of IEBS and related technologies can benefit from the information provided in this study. The information provided in this study may benefit IS local vendors and financial institutions regarding areas where resources could be expended as efforts are made to strengthen Canada's e-economy aspirations. This study showed that SMEs' executives are not ignorant about the perceived benefits of IEBS in the operations, and that they show commitment and support needed to encourage the acceptance of such technologies in their settings. However, the areas of contention include low levels of organizational IT competence, inadequate access to financial resources, and a perceived lack of IS vendor support.

To facilitate greater acceptance of IEBS and related technologies in the region, the government could consider committing resources towards sensitizing SMEs' owners and their employees about the pertinence of such innovations for enhanced business operations. For the same reasoning, the need for e-business mentoring, coaching, and training (Simpson and Doherty, 2004) becomes more cogent. Awareness campaigns tailored for SMEs' owners would be useful in increasing their knowledge of how an IS can be used in business operations. Relevant government agencies and other local sources of expertise can be marshaled towards providing such training and coaching to SMEs in need of such services. With these kind of supports on board it is likely that more and more SMEs will acquire the knowledge to try out IEBS and related technologies in their businesses. Ultimately, the Canadian business climate and economy stand to profit from the widespread use of ICT in business operations (Wade *et al.*, 2004; Warda, 2005; Statistics Canada, 2006).

It is worth noting that an initiative similar to what is being discussed has surfaced in the period following this study. For instance, the Government of Canada launched an initiative called the Small Business Internship Program (SBIP) for 2010-11. Industry Canada (2010) noted that "the SBIP is a collaborative effort of Canadian small businesses, post-secondary institutions and non-government organizations" to help SMEs acquire e-commerce expertise and coaching from the aforementioned. This idea is not at all novel. Others (Premkumar and Roberts, 1999; Mehrtens *et al.*, 2001; Simpson and Doherty, 2004) have reported similar initiatives in other comparable advanced countries. There is however a need to expand such an initiative to include the provision of financial assistance and support geared towards promoting IEBS use in the country's SMEs.

5.3 Limitations and avenues for future research

There are several limitations to this study. Asking only one respondent to present a view on behalf of their organization may be problematic; however, common method

bias was not found to be a problem for the research. The study included a variety of IEBT; it is possible that perceptions for e-mail and e-ERP acceptance in the sampled SMEs may not be similar. By the same token, the views of participants who indicated that their business operations are not suitable for internet transactions were pooled together with those having more favorable perceptions of IEBT. As a consequence, the results of the data analysis might have been negatively impacted by the inclusion of such diverse viewpoints. Further to this, this research's findings cannot be generalized for the whole of Canada (and for larger enterprises in the country). Noce and Peters (2006) had indicated that views differ by firm size. Thus, caution should be taken when using and interpreting the findings presented herein.

Opportunity for future research exists with this current effort. Whenever possible some of the aforementioned limitations could be addressed in subsequent studies. Similar studies to this present effort can be replicated in other less economically endowed parts of Canada (i.e. Nunavut and the other Federal Territories) and in regions of other advanced countries with comparable socio-economic and technological limitations as the Atlantic region of Canada to deepen knowledge in this area of study. As more useful information on the adoption of technological innovations such as IEBT emerge from such regions, cross-national or cross-regional comparative analyses can be performed to deepen knowledge. The data used in this study are cross-sectional in nature; future efforts could consider using longitudinal data to enhance insight. The research framework could be used to study the impacts of similar factors in larger businesses in the region and across the country. Further, the influence of government support on the adoption of IEBT could be investigated as well. Future research using meta-analytic approaches could examine the enablers and inhibitors of IEBT adoption in SMEs in comparable parts of the developed world.

6. Conclusion

This study has attempted to contribute to the discussion about the low levels of IEBT acceptance in Canada's SMEs. The study drew from the TOE framework. The study's findings indicated that perceived benefits, management commitment/support, and external pressure are significant predictors of IEBT acceptance by SMEs in Atlantic Canada. The factors of organizational IT competence, IS vendor support, and the availability of financial resources were found to be insignificant for IEBT acceptance in the region. Thus, this study's findings have enriched the discourse about the reticence of Canadian SMEs in adopting IS products for business operations. It also lends support to observations and viewpoints elsewhere regarding factors influencing IEBT acceptance in SMEs, and it complements past research efforts as well.

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Appendix. The constructs and items used in the questionnaires

(1) Perceived benefits:

- The adoption of internet/e-business technologies would help increase our revenues/profits.
- The adoption of internet/e-business technologies would ultimately help increase our firm's returns on investments (ROI).
- The adoption of internet/e-business technologies would help reduce our direct and indirect costs.
- The adoption of internet/e-business technologies would help improve our business processes.
- The adoption of internet/e-business technologies would help us to serve our customers better.
- The adoption of internet/e-business technologies would help us to work better our suppliers.

(2) Management commitment and support:

- Management is interested in the use of internet/e-business technologies in our operations.
- Management is supportive of the use of internet/e-business technologies in our operations.
- Our business has a clear vision regarding the use of internet/e-business technologies.
- Management communicates the need for internet/e-business technologies usage in the firm.
- Organizational IT competence.
- Our firm knows how information technology (IT) can be used to support our operations.
- Our firm has a good understanding of how internet/e-business technologies can be used in our business.
- We have the necessary technical, managerial and other skills to implement IEBT.
- Our business values and norms would not prevent us from adopting IEBT in our operations.

-
- (3) External pressure:
- Some of our competitors have already started using internet/e-business technologies.
 - Our competitors know the importance of IEBT and are using them for operations.
 - We know our customers are ready to do business over the internet.
 - Our customers are demanding the use of IEBT in doing business with them.
 - Our partners are demanding the use of IEBT in doing business with them.
 - We know our suppliers and partners are ready to do business over the internet.
- (4) IS vendor support:
- IS vendors in the region are actively promoting IEBT and other technologies by providing incentives for adoption.
 - IS vendors are encouraging our business to adopt IEBT by providing us with free training sessions.
 - We can obtain support easily from local IS vendors as we implement IEBT.
- (5) Financial support availability:
- Supporting institutions, e.g. banks provide financial assistance for SMEs wishing to adopt e-business technologies.
 - Our own business will take e-business more seriously if we receive adequate financial support from local banks.
 - We believe that financial support for e-business engagements can be obtained easily from banks and other financial institutions.
- (6) Adoption of IEBT
- Our company makes use of IEBT, very often.
 - Our company uses IEB e-commerce/e-payment, at all times, for its transactions.
 - Our company uses IEB its critical operations.
 - The number of business operations and activities in my company that requires IEBT is high.

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