Critical Success Factors for e-business: An Empirical Study

by

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the degree of Master of Business Administration

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ABSTRACT

This thesis investigates the success factors for e-business identified in the literature. This study also stresses the importance of understanding the difference between e-commerce and e-business terminology. Transactions on the Internet, commonly known as e-commerce, are only a part of the change in how businesses are using and benefiting from the Internet. Organizations have increasingly started aligning basic business operations online, which is commonly termed e-business. Measures of success for e-business are also explored. An a-priori model is designed and the hypotheses are empirically tested by means of a specially designed survey. Regression analysis is carried out to derive the critical success factors for e-business.

The findings of this research will have implications for both e-businesses and traditional businesses (brick and mortar organizations). This research also opens up new opportunities for academicians in studying cross-linkages among the various critical success factors identified through the study.

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1. Introduction

We are in the midst of the Internet revolution, with the rate of web-enablement growing tremendously among businesses. We have already seen that the rapid emergence of e-business has radically transformed the global business landscape over the past decade. Organizations, irrespective of their size and industry, have witnessed a revolution in their business world mainly due to information technology and the resulting e-commerce phenomenon (Shaw *et al.*, 1997). Many companies such as Cisco, or Intel, were able to reduce their operating costs and reduce their order-to-delivery cycle time by moving online (Patel and McCarthy, 2000). The past two years have shown the highs and lows of dot-com businesses all across the globe. On one side we see the success story of companies such as Dell Computers, Cisco, Intel, or Wal-Mart, that were able to successfully transform their business processes via the Internet. On the other hand we have companies such as ToySmart.com that went bankrupt and had to close its retail site, and Amazon.com that after so much initial promise has still to show profits. Also in recent months, the retail sector has witnessed the demise of several dot-com start-ups. A survey conducted by Webmergers.com revealed that at least 435 Internet companies, of which approximately 50% were e-commerce ventures, have shut down since January 2001. A study conducted by the Boston Consulting Group¹ reveals that consumer e-commerce revenues hit \$44.5 billion in 2000—a 66 percent increase over 1999 levels—and represent 1.7 percent of all U.S. retail revenue². Increasingly, industry leaders are

¹ *The State of Online Retailing 4.0* is the latest in a series of annual reports and quarterly surveys conducted by The Boston Consulting Group for Shop.org accessed on 12/12/2001

² <http://www.cio.com/archive/091501/works.html>

leveraging information technology (IT) and the Internet for a competitive advantage in making their businesses grow (Urlocker, 1999). But there has been much debate in linking the performance of firms to IT investments, and there is evidence that Internet based business practices have had bottom line impacts, i.e., profitability, for only some firms (Barua *et al.*, 2000).

This disparity in success and failure of e-businesses has led us to ponder whether there are any success factors for e-businesses or whether the Internet is just another IT tool and organizations should go back and focus on the basics of what they do best. The downturn in the economy of late 2000 and early 2001, which is still continuing, has provided a wake up call for many firms that were surrounded by the myth that anything and everything will work on the Internet. According to Porter (2001), time has come for the companies to take a clearer view of the Internet by focusing on the five competitive forces and returning to the fundamentals of doing business. His viewpoint is clearly supported by Hooft and Stegwee (2000) and Shin (2001), as according to them the five competitive forces of business are clearly affected by the Internet. e-business facilitates 1) entry into new markets by lowering entry barriers for new competitors, 2) increases market transparency as a result of the forward and backward integration in the value chain, 3) increases the threat of substitutes by enabling new approaches to meeting customer needs and performing business functions, 4) influences the bargaining power of suppliers, and 5) buyers by increasing or decreasing the switching costs (Hooft and Stegwee, 2000; Shin, 2001). Thus, generating economic value and creating competitive advantage through operational effectiveness and strategic positioning holds the key to success on the Internet (Porter, 2001). Our research aims at finding out the critical

success factors in which organizations should invest to achieve the desired competitive advantage.

Doing business on the Internet does hold lot of potential for Business-to-Business (B2B) and Business-to-Customer (B2C) companies. Benefits associated with e-commerce include the reduction in intermediation costs, improved information gathering resulting in improved supply chain effectiveness, and improved customer service etc. (Fraser *et al.*, 2000). To be specific, B2C e-business potential includes expanded customer base, increased operational and supply-chain efficiency, and enhanced one to one marketing and B2B e-business potential includes virtual manufacturing, seamless partnerships, and lower operational costs (Patel and McCarthy, 2000).

Though the web represents a fundamental shift in the way business operates by moving the organization beyond physical constraints and giving the company freedom to interact directly with the customers (Palmer and Griffith, 1998), it does not ensure profitability. According to Porter (2001) focusing on growth is not enough for an organization's sustainability in the long run. For example, when we see the results of the early phase of the dot com boom and examples of companies such as Amazon.com, they focused more on growth and less on profitability. Most of the profitable e-businesses are the bricks and clicks, where the online business is the extension of the organizational strategic capabilities (Coltman *et al.*, 2001).

Several researchers have argued that the problems associated with adopting e-business boils down to adopting a strategy that ensures that organizational and system changes take place when adopting e-business and that the change remains a continuous process (Fraser *et al.*, 2000; Saltzman and Luthans, 2001; Hooft and Stegwee, 2000).

Focusing on innovation and creating a flexible organizational culture is required by organizations to sustain competitive advantage (Saltzman and Luthans, 2001). Transforming an organization to keep pace with the Internet world requires top management support, sufficient budgets, and an organizational culture that supports changes (Hoofst and Stegwee, 2000). In order to be successful, e-businesses should focus on creating benefits that customers' want, which will ultimately provide direction towards the integration of the value chain (Porter, 2001).

Even though success is central to any firm's credibility, little effort has been devoted in the literature to understand the factors influencing the success of e-business as a whole. The focus of this research is to identify the success factors for e-business and develop a conceptual framework of those factors. An a-priori model of e-business success factors is developed which will be empirically tested to derive the critical success factors for e-business.

The proposal is divided in seven chapters. The second chapter details the literature related to e-business, measuring success and success factors for e-business. The third chapter describes the proposed model and the variables in the model. The fourth chapter proposes the research objective for the research. The fifth chapter presents the research methodology used in the study, while the sixth chapter discusses the results. The seventh chapter includes conclusions, benefits and limitations of the study, and scope for future research.

2. Literature Review

The literature review chapter consists of three sections. In the first section, the literature of e-commerce and e-business is examined to get a clear understanding of the concepts of e-commerce and e-business. It also includes a discussion on what is the difference between the two terms and why e-business terminology is chosen for this research. The second section defines success and the third section describes the various success factors identified through literature.

2.1 e-commerce and e-business Defined

e-commerce is a part of the new means that has been opened up by the development of the Internet. Simply defined, e-commerce is the secure trading of goods, information, or services conducted using Internet as the medium (Fraser *et al.*, 2000). e-commerce has been in existence since the past three decades in some form or the other like the Automatic Teller Machines and use of credit cards (Applegate, 1999). Inter-organizational systems using a closed standardized form of computer-to-computer communication, commonly termed EDI, were popular till the 90's for conducting e-commerce (Molla and Licker, 2001; Applegate, 1999). Only in the last decade companies have started to use public networks such as the World Wide Web for business-to-business and business-to-consumer transactions (Senn, 2000).

A number of people have defined e-commerce and e-business in number of ways. Some definitions include all the financial and commercial transaction aspects of commerce that take place electronically (Foley and Sutton, 1998). Some definitions are

broader and include doing business across the whole supply chain through the use of computer and telecommunications technology (Alter, 2001). According to the OECD report (1999) definitions given by the same organization changes over time, and the e-commerce definition is dynamic and varies with the objective one wants to measure (OECD, 1999).

e-business is about doing business digitally, linking with customers and suppliers as well as managing enterprise resource planning systems that streamline an enterprise's supply chain (Brache, 2000). Basically, doing e-business across the supply chain can be linked to the concept of the value chain given by Porter (1985), where the firms operate within a network of suppliers, producers, distributors, and retailers to work together to design, manufacture, market, and distribute products and services (Applegate, 1999).

Looking at the definitions given by various authors (Table 2.1), we come to the conclusion that e-business is more than just shopping on the Internet and touches every aspect of the organization.

IBM defines e-commerce as a subset of e-business, which is a broader concept encompassing all the traditional functions along marketing and sales, such as payment systems, order fulfillment and inventory control (IBM, 1998). This viewpoint is also supported by the study conducted by PriceWaterhouseCoopers in Switzerland³. From IBM's point of view e-business will affect all the functions in the value chain while e-commerce will just impact the marketing function. Fingar *et al.* (2000) also support this viewpoint as they mention that the difference between e-commerce and e-business is driven by marketing motives and is thin in substance. e-business, in addition to including

³ <http://www.mcm.unisg.ch/ebusiness/eBiz%20in%20Switzerland.pdf> accessed on 15/11/2001

e-commerce, includes both front and back end office applications. Some of the e-commerce definitions also take a broader look. For example the definition given by Zwass (1996) points out that e-commerce includes not only buying and selling goods, but also various processes within individual organizations that support that goal.

Table 2.1- Definitions of e-commerce and e-business

e-commerce Definition	
Author	Definition
Wanninger (1998)	“Commerce that directly utilizes combinations of computing and communications technologies in some or all aspects of the interactions between a business and its customers.”
Foley and Sutton (1998)	“The exchange of information, goods, services and payments by electronic means.”
Zwass (1996)	“The sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunication networks.”
Bloch, Pigneur, and Segev (1996)	The authors broaden the scope of e-commerce and characterize e-commerce system as “ a system that connects buyers and sellers, supports digital information exchange between parties, support interactivity and can be updated in real time.”
e-business Definition	
Stewart (2000)	e-business is “web enabling core business processes to improve customer service, reduce cycle time, become more cost effective and sell goods, services and information.”
Kalakota and Robinson (2000)	“The complex fusion of business processes, enterprise applications and the organizational structure necessary to create a successful business model.”

Alter (2001)	“The practice of performing and coordinating critical business processes such as designing products, obtaining supplies, manufacturing, selling, fulfilling orders, and providing services through the extensive use of computer and communication technologies and computerized data.”
Huff <i>et al.</i> (2000)	“Everything having to do with the application of the information and communication technologies (ICT) to the conduct of business between organizations or from company to consumer.”
IBM (1998)	According to IBM, which is a technical definition that touches every aspect of the organization, defines e-business as "a secure, flexible and integrated approach to delivering differentiated business value by combining the systems and processes that run core business operations with the simplicity and reach made possible by Internet technology."

We have already seen the failure of dot-coms that were based on e-commerce alone, which is the buying and selling of goods over a digital media. Kalakota and Robinson (2000) rightly point out that there is a shift in focus within firms from e-commerce to e-business. e-commerce is a restricted term and does not include many types of exchange of information. e-commerce mainly includes information related to the actual buying and selling of goods such as the mechanisms for distribution of information as well as the information related to customer service and support (Viehland, 2000). e-business is the redefinition of old business models, with the aid of technology and Internet to maximize customer values. The trend according to the above definitions and the difference in terminology suggest that there is a move from e-commerce to e-business. Moreover, Teich *et al.* (1999) suggested that e-business could enhance the interchange of information between partners by breaking down communication,

negotiation, and co-ordination barriers. Though in literature the terms e-business and e-commerce are used interchangeably at many places, they have different meanings. The business or industry definition can be broader or narrower and generally e-business is used for the former and e-commerce for the latter.

In this research we use the term e-business, as we believe that the term e-business more accurately reflects the domain of interest and the recent trends. Focus of this research is on understanding e-business and its success factors.

2.2 Measuring Success

Definitions and criteria for success change over time for individuals, companies, and industries. Success is often been defined as a result or outcome, or a favorable or satisfactory result or outcome (Saarinen, 1996). Let's start discussion on e-business success by looking at the studies conducted in the area of Information Systems success and e-commerce success.

There has always been a debate on what is meant by Information Systems Success in academic literature (Garritty and Sanders, 1998). Success is a multidimensional concept that can be assessed at various levels such as technical, individual, or organizational, by using a number of criteria such as financial, economic, or behavioral (Molla and Licker, 2001). Delone's and Mclean's (1992) model of IS success is considered to be a breakthrough in measuring IS success which in simple terms can be stated as follows: System quality and information quality impact use and user satisfaction and they in turn directly impact individual performance which eventually has organizational impact (Delone and Mclean, 1992). Key criterion for the IT success is the business's satisfaction with their information systems (Brockway and Hurley, 1998).

A number of studies have been conducted to measure e-commerce success. For example, Han and Noh (1999) focused on assessing the use level and satisfaction level of users and customers in interacting with the e-commerce systems. Schubert and Selz (2001) evaluated the overall effectiveness of the e-commerce systems by studying the web assessment model and how it affects the organizational performance. There have been studies that have looked at the success for web sites in context with e-commerce. The study conducted by Liu and Arnett (2000) explored the factors important for the success of the web site in the context of e-commerce and found that quality of information and service, system use etc. were important variables for e-commerce success. We can see a link between the IS success factors given by Delone and Mclean (1992), and Liu and Arnett (2000), as they have given emphasis on user satisfaction. Molla and Licker (2001) extended Delone's and Mclean's model of IS success to measure e-commerce success. They have replaced user satisfaction from the original model with customer satisfaction as the measure of e-commerce systems success or the dependent variable. This decision can also be supported by the study conducted by Torkzadeh and Dhillon (2002) where they measured the factors that influence the success of Internet commerce by focusing on the fact that the ultimate success of e-commerce depends on how a customer perceives its value. The study conducted by (Hasan and Tibbits, 2000) moved a step further and applied balanced scorecard measures to e-commerce, which included financial, customer, business process and innovation and learning related measures.

As mentioned in the earlier part of the literature review, for the purpose of this study we will focus on the e-business terminology as we feel that e-commerce and e-

business are different. As compared to measuring IS success and e-commerce success, not many studies have been conducted that have measured e-business success from the organization's point of view.

We propose a comprehensive measure of e-business success, which has been adapted from the study conducted by Hasan and Tibbits (2000) and Martisons *et al.* (1999), where they looked at the application of the balanced scorecard to e-commerce and management of information systems respectively.

As with any offline business, the success of an e-business is largely determined by how effectively it executes a set of fundamental business processes. Basic principles of business success remain the same whether it is an e-business or brick and mortar business. Organizations venturing into e-business seek faster time to market of their products, increased market share and improved operational efficiency (Urlocker, 1999). Financial measures are not the only criteria for measuring success in the new economy (Skyrme and Amidon, 1998). Measures of success should include aspects related to customers, internal business processes, and innovation and learning (Skyrme and Amidon, 1998).

Based on the balanced scorecard terminology and the literature review of success measure, we have developed a consolidated measure of 5 criteria for e-business success for the purpose of this study.

- Increased Return On Investment
- Increased Profitability
- Improved Business Processes
- Improved Flexibility

- Improved Product and Service Innovation

2.3 Success Factors

There was a time when first mover advantage was critical and many companies such as Yahoo, or America online, reaped the benefits of being first on the net (Chan, 2001). It is not the case any more, as in order to achieve long term sustainability, the first mover advantage must be accompanied by a sound business strategy (Chan, 2001). Also there is no empirical research that supports that first mover advantage is the sufficient condition to maintain a company's position at the top as the market evolves (Coltman *et al.*, 2001). Many Internet companies were founded with the idea of venture capital, but now the tide has turned with the dot com collapse. To maintain the first mover advantage firms have to invest in the success factors for e-business. Academicians and practitioners have identified a number of factors that may lead to e-business success. These factors are business oriented as well as technology oriented.

We have identified 47 factors through literature. Based on their similar characteristics 44 factors are grouped into eight consolidated factors. These factors are 1) customer focus, 2) e-business organizational culture, 3) top management support, 4) supplier orientation, 5) strong e-leadership, 6) suitable e-business technical infrastructure, 7) effective web site and content management, and 8) e-business strategy. Privacy, trust and security factors were taken as presented in the literature.

2.4.1 Customer Focus

The customer focus construct involves all the aspects of customer interaction which we feel are relevant for e-business and which have been identified in the literature as success factors for e-business. The expression “Customer is king”, is extremely relevant for today’s Internet enabled economy. In the Internet age, customers are becoming more demanding, more knowledgeable and less tolerant than ever before (Trowbridge, 2000). From customer acquisition to building loyalty, *customer care* is more and more becoming the corner stone of any business firm and the key to increasing its customer relationships. A number of researchers (Barua *et al.*, 2000; Finger *et al.*, 2000; Regis, 1995; Han and Noh, 2000) have identified *customer orientation/customer service* as an important driver for the success of an e-business firm, directly affecting its profits. These authors have stressed that the customer is a business asset and should be managed with the same care as other assets.

For e-business firms the importance of customer focus becomes a critical success factor as the Internet provides a medium for firms to share customized and rich information on a real time basis in an interactive environment (Barua *et al.*, 2000). Han and Noh (2000) in their research have identified *convenience to customers* as the single most important driver for business transactions on the web. Providing a rich experience to customers through seamless functioning of the customer relationship is a necessary condition for e-business success and which can be achieved by the integration of enterprise information with customer information (Fingar *et al.*, 2000).

An e-business firm needs to take a holistic view of the customer. Practicing knowledge management will play an important role in serving and *targeting the right*

customers (Seybold, 2000). Profiling customer data and analyzing it to develop deeper understanding can help in better managing customer care functions and the relationship with customers. An e-business must understand and manage the quality of experience of their customers. To accomplish this, it is essential that firms identify unique customer scenarios and offer targeted customized solutions for each market segment (Regis, 1995). *Personalization* is critical for generating customer loyalty (Crossan and Spracklin, 2001). Providing exceptional customer service by being responsive at one end and providing high touch personalized and customized information at the other is the key for e-business success. For example Ford Motor Co. has collaborated with portals to identify customer preferences, and offers customers a wide selection of cars, and has also web-enabled the Auto loan process. *Retaining customers* becomes more important for e-businesses as the costs for acquiring and converting customers is much higher than retaining them. e-businesses typically spend three to five times less in retaining customers than their brick and mortar counterparts (Agarwal, 2001). Many researchers (Reichfield and Schefter, 2000; Urlocker, 1999) have found that acquiring customers on Internet is more expensive than retaining them.

Another important issue to be considered when conducting e-business is the *customers' readiness* for e-business. Lack of widespread Internet access and bandwidth considerations, specifically in developing nations, limits the ability of the customers to use the web for shopping (Prasad *et al.*, 2000). This research may find if customer's readiness is a big issue for Canadian companies.

2.4.2 e-business Organizational Culture

The link between organizational culture and organizational success is well established throughout literature (Ouchi, 1981; Peters & Waterman, 1981; Deal & Kennedy, 1982). Organizational culture can be described as the “characteristic way and values through which work is done in organizations” (Saltzman and Luthans, 2001). The framework proposed by Cabrera and Bonache (1999) in their research suggests that if organizational culture, i.e., the way of doing things in the organization, is consistent with key factors for business success it becomes an asset for the organization. An e-business organizational culture construct constitutes all the factors that are important for an e-business to develop an adaptive, flexible organizational culture that involves empowerment, participative decision making, sharing information, knowledge and organizational values and results in a competitive advantage for the organization (Saltzman and Luthans, 2001).

An organizational culture conducive for conducting e-businesses may be one of the determining factors in succeeding in e-business. Organizational culture provides a basis for decision-making that operates in the absence of written policies (Mallak, 2001). For traditional companies that were not born digital, changing to the new digital environment in which e-business thrives is the biggest challenge. Organizational long standing internal barriers such as resistance to change and static thinking of employees will pose major threats in an environment that demands continuous innovation and learning (Bloch *et al.*, 1996). Authors (Kanter, 2001; Shankar, 2001; Crowley, 1998; Madden, 1998) agree that firms taking on e-business initiatives need to revise their organizational culture and make it *more customer centric*. Kanter (2001) and Bloch *et al.*

(1996) point out that a culture change that embraces *continuous innovation and learning* is not easy to bring about for established companies. However, they do agree that the change is lasting and forms the foundation for many more changes to come.

Based on the literature surveyed we believe that the future e-business organizational culture will demand a culture of continuous innovation and a move towards a learning organization. Because of the fast pace of the digital world and the low entry barriers for competitors, developing a culture that values change opportunities may turn out to be important to succeed in e-business. Organizational culture should be *consistent with the revised e-business strategy* and implementation plan (Shankar, 2001). Culture that breeds innovation and productivity is the key for e-business success (Crossan and Spracklin, 2001). Travers (2000) suggests that people and the environment have more to do with the adoption and success of e-business than technology. It is the way in which people, within and outside the business, understand the technology and *transform their work places* accordingly shall make a big difference in the success and failure of e-business (Delargy, 2001). To achieve this transformation *frequent and effective communication* with and between employees that involves free flow of information is desired (Follit, 2000). There is also a need in the organization to *foster collaborative work* environments where employees are encouraged to share knowledge and information (Wood, 2000). Another important concept for successful e-business is the building of *virtual communities* of interest (Dellargy, 2001). Developing an environment where effective use of virtual teams can take place may hold the key for competitive advantage in the digital world (Townsend *et al.*, 1998). Retention of employees, a major challenge

of the new economy, will depend greatly upon recognition and motivation an employee receives (Bloch *et al.*, 1996).

Another key ingredient of an e-business organizational culture is the *understanding of the Internet culture* by its employees. Huff *et al.* (2000) are of the view that true success in e-business can be achieved if everybody in the organization feels comfortable with the new set of goals and benefits. The role of the leader is to ensure that the employees understand the organizational goals and the benefits of going digital. To accomplish these objectives *education and training* may provide a key role, and leaders should make sure that everyone in the organization at least understands the basic e-business concepts (Travers, 2000). We believe that all the factors that constitute the e-business organizational culture are focused on either the way employees should work or the steps organizations should focus on to enable employees to understand the e-business culture. Our research will enable businesses to understand the importance of the active involvement of leadership in e-business initiatives such as the change in work place activities focusing on speed and flexibility.

2.4.3 Top Management Support

The top management support construct constitutes all the aspects that senior managers have to take in order to succeed in e-business. Various researchers (Saltzman and Luthans, 2001; Bartlett and Ghoshal, 1994) have already pointed out that the creation of a competitive advantage, and the transformation that is desired for an e-business to be successful, has to start from top management. It has been proven all along that unless senior managers change their own priorities and way of doing things success is hard to

come by an organization in this fast changing business environment (Bartlett and Ghoshal, 1994).

A successful e-business strategy does not happen without the support of the senior executives. According to Prasad *et al.* (2000) getting top management commitment is a major challenge faced by e-businesses globally. Various authors (Jones and Field, 2000; Kalakota and Robinson, 2000; Stewart, 2000) are of the view that top *management commitment* towards the e-business initiative is vital for the firm to succeed. Jones and Field (2000) stress that in order to satisfy all the players associated with the firm such as the customers, the suppliers, and the shareholders, e-business firms need effective management, leadership, and commitment from the top to meet their expectations. Kalakota and Robinson (1999) point out that senior executives must take responsibility for understanding the role of various technological changes taking place and their impact on the firm's business strategy. Weill and Broadbent (1998) are of the view that top management should be responsible for the firm's information technology capabilities.

Stewart (2000) believes that e-business should start with the CEO and recognizing its strategic importance for the business is important for its success. e-business initiatives can succeed if and only if top management has a realistic view of the investments involved with it. A finding from the survey conducted by Deloitte Consulting⁴ (2000) suggests that e-business initiatives do not get the support and funding required from senior management. An e-business may succeed if the senior management team is deeply involved in the development of the company's e-business direction (Trowbridge, 2000).

⁴ <http://www.deloitte.com/tidalwave/default.htm>

According to Brache (2000) senior managers must take an active part in *creating the e-business strategy*, which, according to him, falls within the broader strategic framework of the organizational strategy. Senior managers play an important role in actively sponsoring adequate amount of resources in terms of personnel, budgets, or software tools (Brache, 2000). A sustained presence in e-business requires a strong *organizational commitment to increase the resources* devoted to it (Bloch *et al.*, 1996). The role of senior management in *mobilizing the work force* is critical, as it will aid in adaptation to the e-business environment (Venkataraman, 2000). Also their commitment towards recognizing the opportunities and challenges of the net world can play a major role in the success of an e-business initiative (Venkataraman, 2000). Our research may enable e-business senior managers to understand that in order to succeed in an e-business initiative they should lead the organization upfront and take an active role in implementing the e-business strategy.

2.4.4 Supplier Orientation

Suppliers are important for all industries. The supplier orientation construct involves all the facets of relationship between the supplier and the organization and how these facets can be used to strengthen a firm's position in the market. We have seen success stories of companies such as Charles Schwab and Dell Computers that leveraged strengths of their suppliers and partners to reap the benefits of locking out potential competitors, reaching immediate scale, or strengthening relationships (Chan, 2001). To be able to change at the rate the Internet world changes, e-business firms need to use the skills of suppliers. According to Jones and Field (2000) using suppliers efficiently help

companies deal with an environment of rapid change, stay focused, and capitalize on their own skills. Research conducted by Barua *et al.* (2000) suggests that “uncertainty in the value chain due to factors such as demand volatility, product innovation, quality, or cost allows supplier processes to exert a direct impact on the operational excellence of a firm.” Strong supplier relationships may help in reducing these uncertainties. These arguments are well supported by Littlestone (1999) who says, “*Networking with the critical mass*, especially the suppliers, goes a long way in defining the e-business firms success”. Supplier processes directly impact customer satisfaction by playing an important role in fulfilling the customer requests in timely manner (Barua *et al.*, 2000).

The amount of strategic information sharing between buyers and sellers for seamless functioning depends on trust and a strong relationship between the two parties. Barua *et al.* (2000) also point out that trust built with the right incentives, will aid buyers and suppliers in sharing sensitive and valuable information. *Supplier orientation of IT applications* in sharing quality, resource and relationship related information also plays an important role in developing a strong relationship. Maintaining a *sound relationship* with them becomes more important in the e-business world as companies focus more on what they do best. Forming partnerships with suppliers can become a critical success factor for e-business firms, as it will enable the firms to concentrate on what they do best by focusing on their core competencies (Godenhielm, 1999). Strong alliances with suppliers can also help e-business firms to manage risks more efficiently, specifically when entering new markets (Crossan and Spracklin, 2001). Our research may throw more focus on the findings of Barua *et al.* (2000). They have suggested in their research that the success of e-business depends not only on how the firms automate their value chains,

but also on the readiness of their suppliers and partners in performing electronic transactions.

2.4.5 Strong e-leadership

Strong leadership is an important driver for running any business. The link between leadership construct and organizational success is well established. Kanungo (1998) argues that to develop the much-desired adaptive capabilities within the organization to succeed, leaders have to play an active role. e-leadership as defined by Avolio *et al.* (2001) means “a social influence process impacted by the use of advanced information technology tools to produce a change in the attitudes, feelings, thinking, behavior and performance with individuals, groups or organizations”.

e-leadership can occur at any level within the organization. According to Trowbridge (2000), in an e-business world leadership means the ability of the leader to *communicate the e-business vision* throughout the organization. Emphasis on encouraging experimentation, promoting tolerance for ambiguity and chaos and teaching employees that failure is a part of success are some of the characteristics of e-leadership (Trowbridge, 2000). On the other hand Walker (2000) is of the view that leadership characteristics should include the *capacity to adapt, innovate and grow rapidly*. It is the responsibility of the leader to promote the company as a customer-focused company rather than a product-focused company (Crossan and Spracklin, 2001). An important role of the e-business leader is to emphasize the importance of generating competitive advantage through the use of e-business technologies among the senior management. This has strong implications for the investment commitment towards the e-business

initiatives. Responsibility of hiring and retaining the right personnel also lies with the leader of the e-business project. Enabling knowledge management by *encouraging sharing and learning* will result in sustaining a high performance work culture (Walker, 2000). Executives must take the responsibility for *understanding the implications of the latest technologies* and anticipating their effects on the business strategy (Kalakota and Robinson, 1999).

2.4.6 Suitable e-business Technical Infrastructure

The e-business technical infrastructure construct constitutes the operating infrastructure required to run an e-business and includes all the technical characteristics that provide value for customers (Venkataraman, 2000). Typically, the e-business infrastructure is comprised of five layers of services, namely transport, network, data, application, and business-to-business services (Palmer, 2000). Successfully implementing the e-business initiatives requires a robust, organizational-wide e-business infrastructure that would support the organization's strategy. It enables external customers to conduct various e-commerce activities online, provides necessary knowledge to corporate employees to serve the customers better, and finally, provides the necessary means to collaborate with suppliers and partners (Rajput, 2000). A sound e-business infrastructure goes a long way in developing strong relationships with customers as well as suppliers.

Integration of various front-end IT applications with the back office applications that forms the database is the key in designing the technical infrastructure for any e-commerce system. *Streamlined operations* are the key for success in e-business, which results in more reliable systems (Venkataraman, 2000). Reliability in the business

operations such as timely delivery of orders and quick response to customer queries, easy return and exchange process prove beneficial for retaining customers and generating loyalty among them (Agarwal, 2001).

e-business integration significantly improves organizational performance and is one of the critical success factors for an e-business (Urlocker, 1999). According to Barua *et al.* (2000) successful e-business is a result of the seamless flow and sharing of order and customer information throughout the value chain ranging across all the channels of operation. This becomes possible only because of an integrated technical infrastructure that provides the necessary tools to execute both the selection and transaction of products and services on the web (Scarpa, 2000). It makes it quick and easy for authorized users to access the appropriate information and services and at the same time provides secure transactions.

Another important issue that came up consistently in literature is the *integration of the new systems with the existing applications*. For example the study conducted by Hsu and Pant (2000) found that manufacturing enterprises are among the most complicated to integrate. A non-integrated system leads to an increase in cycle time of both the customers' and suppliers' processes and negatively impacts their experience with the firm. The ability of the firm to successfully manage large volumes of product information as well as rich multimedia component on its web site is the key determinant in the success of any online enterprise (Scarpa, 2000). e-businesses are dependent upon the performance of their information technology systems (Palmer, 2000). Businesses that fail to pay attention on their information technology infrastructure in terms of *reliability*,

continuous updating, fine-tuning, and maintenance can have severe consequences such as frustrated customers and business partners.

Stewart (2000) argues that e-business firms need to realize that *security* is important not only to protect information and systems but also in building consumer trust. Thus, reliable payment infrastructure that facilitates smooth functioning of transactions holds the key in successful e-business ventures. Electronic business transactions can be successful if and only if financial exchange between the buyer and seller occurs in a simple, universally accepted, safe and cheap way (Bloch *et al.*, 1996).

2.4.7 Effective Web site Design and Content Management

The web site design and content management construct constitutes all the visible aspects of an e-business, and its effective management acts as a powerful differentiator for businesses (Venkataraman, 2000). A web site is the company's user interface and allows it to accumulate knowledge of customers' buying behavior that can be utilized to enrich their shopping experience (Porter, 2001). Web sites are the new medium that provide organizations with an opportunity to interact with their customers and suppliers and vice versa. Web sites are increasingly becoming the "information backbone" of the company and bring the corporations closer to their partners and suppliers by creating strong relationships (Powell *et al.*, 1998). In the e-business world, the web site controls the complete shopping experience for the consumer. It makes the customer feel that the firm is trustworthy, dependable, and reliable, which results in customer satisfaction and e-business success (Liu and Arnett, 2000; Kotler, 1994). According to Evans and King (1999), the web is becoming a key tool for companies as it is being used both internally

to develop strategy and communicate with employees, and externally to interact with customers.

A web site, by its fundamentally revolutionary nature, can easily reveal any flaws in the company's business processes (Powell *et al.*, 1998). The importance of a web site as a business-to business and business-to-consumer marketing tool cannot be underestimated, and e-business firms need to invest in developing the content as well as the design of the web site (Powell *et al.* 1998). *Content management* is an important aspect of web site design. To effectively drive product demand and brand perception, an e-business must effectively manage one of the core functions of on-line commerce: content management (Scarpa, 2000; Venkataraman, 2000). Choosing a URL is the most important step in the web site branding process and is the most intuitive and direct connection between a firm's existing brand and the online brand (Jones and Field, 2000).

From the customer's point of view, a well-designed site is one that contains relevant and interesting content, is *easily navigable, is attractive, and offers excellent functionality* (Jones and Field, 2000). Simeon (1999) provided the AIPD (attracting, informing, positioning and delivering) approach to dealing with the evaluation of Web site success. Ease of use and readability of the web site leaves a positive impression on the potential customer (Savin, 2000). Firms using the web as a direct medium of sale should move beyond the brochure look on their sites and develop sites rich in media, including audio, video, and multiple hyperlinks. We feel that unless the full utilization of the web, both in terms of marketing activities and technical characteristics, is realized, success will be hard to come by for e-businesses.

2.4.8 e-business Strategy

e-business strategy lies at the center of any e-business initiative. Porter (2001) and Venkataraman (2000) assert that the success of an e-business firm starts from its business strategy. We have seen many examples (Amazon.com, etoys.com) where companies focussed on maximizing revenues and market share rather than maximizing profits. Porter (2001) believes that by ignoring the basics of strategy many companies have started their own downfall. To assure continuous success in an e-business, a firm's commitment towards it needs to be strong and clear in defining its e-business leadership, roles and responsibilities of its people, cross-functional interdependencies, budget allocation, and the management structure (Butler, 2000). A sound business strategy serves as a guide for defining its e-business strategy in the rapidly changing business environment and helps the firm in turbulent times such as the one we are facing these days and gracefully adapting to the changes (Jones and Field, 2000).

According to Hackbarth and Kettinger (2000) an e-business strategy should pass through three levels of continuous development and competence. Where there is no e-business strategy in place, firms should start with experimentation. Second level should emphasize integration of e-business strategy with the corporate strategy; and finally, the transformation level where the e-business strategy becomes the driver of overall business strategy (Hackbarth and Kettinger, 2000). Moving from one level to another involves the understanding of not only the company's business processes, but also an understanding of the customers, suppliers, and competitors (Hackbarth and Kettinger, 2000).

Strategic thinking and vision are the most critical components of business strategy. According to Venkataraman (2000) top management should play a major role in

developing the e-business strategy just like any other business strategy. A clear and simple vision of the task ahead should be developed by the *senior management team* and communicated throughout the organization. According to Follit (2000), the success of e-business will depend on how well the vision links the constituents of e-business transformation with the clear and understandable long-term goals.

Some of the components of e-business strategy are the policies for attracting and retaining key talent, and forming alliances and partnerships. *Allocation of human, technological and financial resources* should form an important part of e-business strategy, as these should be made available separately from existing business, if applicable (Venkataraman, 2000). Decisions related to *forming alliances and partnerships* in e-business environment play a critical role for the success of the firm (Godenhillem, 1999). These should be clearly specified in the e-business strategy. Huff *et al.* (2000) emphasize that there should be *flexibility* in moving on with the strategy and readiness for a radical shift if required. An e-business strategy is a strategy about business first and technology second, and it should have all the success factors as its starting point.

2.4.9 Privacy

Privacy, as a success factor for e-business, includes all the measures taken by it to safeguard customer's information (Venkataraman, 2000). It has been argued throughout the literature by many researchers (Venkataraman, 2000; Culnan, 2000; Hoffman *et al.*, 1999) that ensuring privacy of customer's data goes a long way in determining the success of e-business. According to Westin (1967) privacy is defined as "people's ability to control the terms under which their personal information is acquired and used." From a

business point of view, privacy means making consumers comfortable in disclosing their personal information on the web. It involves simultaneously communicating to the consumer the benefits of disclosing their personal information, and at the same time convincing them that it is a low risk proposition (Culnan, 2000). Privacy issues become more important on the Internet as the new medium of commerce offers “unprecedented opportunities for the invasion of privacy.” Through the medium of the Internet consumer privacy can be very easily invaded, and e-business firms wishing to succeed need to closely examine the issue of privacy (Hoffman *et al.*, 1999). The importance of the issue of privacy on the Internet can be realized from the fact that in repeated surveys, Canadians have expressed concern about privacy and about the loss of control over their personal information on the Internet⁵.

Various studies conducted on consumer privacy come to the same conclusion that on-line consumers are concerned with their privacy on the Internet (Boston Consulting Group, 1997; Industry Canada, 1998; Hoffman *et al.*, 1999). The e-Trust study conducted by Boston Consulting Group (1997) indicated that consumers would willingly provide more personal information over the Internet if they were assured that proper security measures were being taken to protect their personal information. Assurance that their information would not be disclosed outside the organization would benefit them, too. The discussion paper argues that government should legislate privacy standards to ensure that a disregard does not lead to a competitive advantage and that consumers have a method of retribution if the standards are not followed. Industry Canada defines privacy as “the right of individuals to determine when, how, and to what extent they will share personal

⁵ <http://e-com.ic.gc.ca/english/privacy/632d4.html>

information about themselves with others.”⁶ Consumer privacy in online environments is not only a major issue with the ultimate users and business communities but is also an important debatable and policy issue for the government authorities all across the globe⁷.

To maintain the highest level of trust and confidence among its customers, an e-business firm should explicitly enforce a privacy policy. Keen (2000) is of the view that a company’s privacy policy must be easy to understand and must have explicitly stated all possible ways of customer interactions. Privacy on the web is a matter of basic web design principles (Keen, 2000). Privacy policy should address some basic questions such as what information is being collected, how it will be used, with whom the information might be shared, and who is collecting the information (Jacobs *et al.*, 2001). Han and Noh (2000) have summed up the importance of privacy by emphasizing the fact that “the amount of personal information required to complete transactions, the privacy policy and rules followed by the e-commerce sites and customers’ disposition towards the provision and disclosure of personal data may affect the use of e-commerce systems and the customer satisfaction” (Han and Noh, 2000).

Privacy and security are related. To be effective, a privacy policy must be supported by security measures that protect against unauthorized disclosures of private information. Proper security measures include a technical solution that keeps unauthorized users out of the portions of databases containing private information. Articulating clear guidelines for employees that are authorized to access private information will help protect an organization from violations of the privacy policy (Jacob *et al.*, 2001). In the literature surveyed we found that there is a close link between the

⁶ <http://e-com.ic.gc.ca/english/privacy/632d4.html>

⁷ http://www2000.ogsm.vanderbilt.edu/papers/anonymity/anonymity2_nov10.htm

issues of security and privacy. Security and privacy are interrelated, and more secured technical infrastructure would lead to a better chance of protection of privacy (Keen, 2000).

2.4.10 Trust

CEO's of many companies such as Dell Computer, eBay, and Vanguard feel that consumer trust is vital to the success of their online operations (Reichfield and Schefter, 2000). Acquiring customers on the Internet is enormously more expensive than retaining them (Reichfield and Schefter, 2000; Urlocker, 1999). Thus, the importance of trust as a success factor for e-business cannot be neglected. Trust as defined by Blau (1964) and Rotter (1967) is "the belief that a party's word or promise is reliable and a party will fulfill his/her obligations in an exchange relationship." Morgan and Hunt (1994) define trust as occurring "when one party has confidence in an exchange partner's reliability and integrity." Reichfield and Schefter (2000) believe that there is a big difference between a traditional and online trust factor, as the value of trust is far greater on the Internet than in the physical world. The importance of trust in the e-business environment is more because of the physical separation of the buyer and seller, and the perceived insecurity on the Internet. Jarvenpaa and Grazioli (2001) believe that reputation and size are harder to convey, and close customer relationships more difficult to develop, in cyberspace than in a traditional physical setting. To develop a trustworthy e-business relationship the seller must foster customer loyalty and grow the relationship carefully. Thus, trust becomes a central issue in the negotiation process (Warrington *et al.*, 2000). A trust relationship

should exist between all the stakeholders in an e-business such as the service providers, consumers, and businesses (Jones, 2000).

The results of the survey conducted by Hoffman *et al.* (1999) reveal that a consumer's expectation of privacy depends on the medium of transaction. The survey also found that the primary barriers to consumers providing data to web sites are related to trust and the nature of exchange relationship. Customers' fear of commercialization of their personal data and the fundamental lack of trust between most businesses and consumers on the web today poses a major problem for e-business firms. On the web it is reflected in the consumers' concern that web providers will sell their personal information to third parties without their knowledge or permission (Hoffman *et al.*, 1999). Thus, the most effective way for commercial web providers to develop profitable relationships with online customers and earn success in their business is to earn their trust by enriching their experience.

Warrington *et al.* (2000) are of the view that indicators for trust in an e-business environment are two fold. One that is based on the past experience of the customer and the other on trusts cues. According to them, trust cues such as the return policy of goods of the company, name recognition, web site appearance, contact information of the company, and some information about the existing customers would go a long way in developing trust among the existing and potential customers for an e-business company. Privacy and security policies can also play a major role in convincing customers. In an e-business environment trust can be best achieved by allowing the balance of power to shift towards a more cooperative interaction between an online business and its customers (Hoffman *et al.*, 1999). Building trust is equally important in both B2C and B2B

environments, as in B2B environment sharing of confidential information with the business partners can sometimes be passed onto the competitors (McGarvey, 2001).

2.4.11 Security

Security is one of the major concerns for organizations across the globe. The benefits of e-business are impossible to realize without a coherent and consistent approach to e-business security. Many researchers (Jones *et al.*, 2000; Bingi *et al.*, 2000; Liu and Arnett, 2000) have proposed the importance of security as a success factor for online businesses. The security construct consists of all the issues that are important not only for the transaction and payment mechanism of customers, but also for data applications, user access, and network and systems security⁸.

Consumers are distrustful of the safety of the information they give out on the web. Customers are looking for a secure environment where they can undertake transactions without the fear of their personal and financial data being unsafe (Jones and Field, 2000). The main concern of consumers about online transactions is security related to credit card information and privacy related to personal information (Jones and Field, 2000). Researchers (Liu and Arnett, 2000; Shaw *et al.*, 1997) have identified that secure transactions are critical to the success of e-business. Liu and Arnett (2000) also argue that security alone will not result in success, and the e-business firm should pay attention to the privacy and trust issues related to customer transactions. Customers would not pay for products or services over the web if they feel dissatisfied over the transmission of

8. <http://www.e-consult.co.uk/FirstHome.html>

financial information. Jones and Field (2000) have also argued that security concerns of the customers are closely related to branding as issues of trust and consumer confidence become more important if the brand is not well recognized. Lack of standard technologies for secure payment play an important role in the low activity of consumers on the Internet.

3. Proposed Model

Based on the literature review an a-priori model is developed for the study (Figure 3.1). The model represents the theoretical framework for this study. The dependent variable is the degree of success of e-business. This is the variable of primary interest and an attempt is made by this study to explain the variance in this dependent variable by a number of independent variables: the success factors. These independent variables are categorized as 1) customer focus, 2) e-business organizational culture, 3) top management support, 4) supplier orientation, 5) strong e-leadership, 6) suitable e-business technical infrastructure, 7) effective web site design and content management, and 8) e-business strategy. The relationship between the independent variables and the dependent variable is influenced by the three moderating variables: privacy, trust, and security. All these variables are explained in section 2.4.1 to section 2.4.11.

As seen in the model, e-business strategy, top management support, strong e-leadership, e-business organizational culture, and supplier orientation directly determine the success of e-business. Privacy, trust, and security factors are closely related to each other. Privacy and trust factors influence the relationship between customer focus and e-business success, suitable e-business technical infrastructure and e-business success and web site design and content management and e-business success. Security influences the relationship between suitable e-business technical infrastructure and e-business success.

Table 3.1- Variables in the Model

Independent Variables	Moderating Variables	Dependent Variable
Customer Focus e-business Organizational Culture Top Management Support Supplier Orientation Strong e-leadership Suitable e-business technical infrastructure Effective web site design & content management e-business strategy	Privacy Trust Security	e-business Success

Figure 3.1- An A-priori Model of e-business Success Factors

3.1 Research Hypotheses

Based on the success factors identified through literature and the a-priori model, the following hypotheses were formulated.

H1: Greater the focus on customers, more likely the e-business success.

Based on the literature review, we propose that if organizations focus more on customers, they are more likely to succeed in their e-business initiatives. There exists a positive relationship between customer focus and e-business success.

H2: Stronger the e-business organizational culture, more likely the e-business success.

Based on the literature review, we propose that if organizations focus more on creating an e-business organizational culture, they are more likely to succeed in their e-business initiatives. There exists a positive relationship between e-business organizational culture and e-business success.

H3: Greater the top management support, more likely the e-business success.

Based on the literature review, we propose that if organizations have greater top management support, they are more likely to succeed in their e-business initiatives. There exists a positive relationship between top management support and e-business success.

H4: Greater the supplier orientation, more likely the e-business success.

Based on the literature review, we propose that if relationship between the supplier and the organization is strong in terms of doing e-business, organizations are more likely to succeed in their e-business initiatives. There exists a positive relationship between supplier orientation and e-business success.

H5: Stronger the e-leadership, more likely the e-business success.

Based on the literature review, we propose that organizations with stronger e-leadership are more likely to succeed in their e-business initiatives. There exists a positive relationship between e-leadership and e-business success.

H6: Greater the technical maturity, more likely the e-business success.

Based on the literature review, we propose that if organizations possess greater level of technical maturity, i.e., if they have a sound technical infrastructure to support e-business, they are more likely to succeed in their e-business initiatives. There exists a positive relationship between sound technical infrastructure and e-business success.

H7: Greater the efficiency in web site design and content management, more likely the e-business success.

Based on the literature review, we propose that if organizations have an efficient web site design and content management, they are more likely to succeed in their e-business initiatives. There exists a positive relationship between effective web site design and content management and e-business success.

H8: Greater emphasis on e-business strategy, more likely the e-business success.

Based on the literature review, we propose that if organizations have an e-business strategy, they are more likely to succeed in their e-business initiatives. There exists a positive relationship between e-business strategy and e-business success.

H9: Greater the focus on customers, more likely the e-business success, when privacy and trust are high.

Based on the literature review, we propose that if organizations focus more on customers, have an effective privacy policy, and have invested in developing customer trust, they are more likely to succeed in their e-business initiatives.

H10: Greater the efficiency in web site design and content management, more likely the e-business success, when privacy and trust are high.

Based on the literature review, we propose that if organizations have an effective web site design and content management, have an effective privacy policy, and have invested in developing customer trust, they are more likely to succeed in their e-business initiatives.

H11: Greater the technical maturity, more likely the e-business success, when security, privacy and trust are high.

Based on the literature review, we propose that if organizations have technically matured e-business technical infrastructure, have secured systems, have an effective

privacy policy, and have invested in developing customer trust, they are more likely to succeed in their e-business initiatives.

4. Research Objective

The objective of this research is to identify the critical success factors for e-business. Based on the success factors for e-business identified from the literature, critical success factors will be derived. The research objective for this research is:

- What are the critical success factors for e-business?

We propose to survey Canadian brick and mortar firms involved in e-business initiatives to achieve the proposed objective. Our data set is restricted to Canadian firms; however, we believe that there will not be much difference between the critical success factors for American and Canadian firms.

5. Research Methodology

This chapter describes the steps that were taken to conduct this study. This chapter is further divided into four sections. Section 5.1 discusses the research design of the proposed study. Section 5.2 looks at the survey instrument details. Section 5.3 discusses the sampling details and section 5.4 provides the details of the data collection method used.

A number of studies have been carried out for studying the success factors for a particular issue such as the critical success factors for new product development (Lester, 1998), critical success factors for strategic alliances in the information technology industry (Rai *et al.*, 1996), business process Reengineering implementation process success factors (Al Mashari and Zairi, 1999) and the enterprise resource planning implementation success factors (Nah *et al.*, 2001). The approach followed in these studies is similar in the sense that each study borrowed the related success factors from literature and then tested them empirically to derive the critical success factors. This study follows the same pattern of identifying the success factors from literature and then testing them empirically to derive the critical success factors.

5.1 Research Design

The proposed study involves an investigation of success factors for e-business firms. Little effort has been done in the literature to understand the relationship among the various success factors for e-business, specifically for Canadian firms. The research is formal in nature, as hypotheses will be empirically tested. An ex-post facto design was

implemented, as the researcher had no control over the independent variables. The study undertook collection of primary data with the help of communication-based techniques such as the web based and paper based surveys. The study was carried out once and represents the snapshot of one point in time.

5.2 Questionnaire Design

The initial structured questionnaire was generated based on the existing academic and practitioner-oriented literature. The questionnaire was pre-tested with two organizations. The final questionnaire consisted of three sections and a total of 15 questions. First section gathered data related to the organization's general information, the second section gathered data related to the organization's e-business related information and the third section asked the respondents to provide their personal information if they requested a summary of the results after the completion of the study.

5.2.1 Measures

Since no other scale was available to measure the success factors for e-business, a consolidated questionnaire composed of different measurement scales and questions was designed. Each related success factor was measured on a 1 to 5 Likert scale. Respondents were also asked to rate their perception of the importance of the various success factors identified in the literature. They were also asked to rate their perception of whether they considered their e-business successful and whether they were able to achieve the goals and mission of the e-business initiatives.

5.3 Sampling Design

Probability sampling more specifically, random sampling was used to determine the appropriate firms for the collection of data. Some firms were randomly chosen from various databases such as Globe and Mail 1000 and the Ottawa Business Journal. The population for the research was infinite including all the firms in Canada conducting e-business. We identified a business to be an e-business if it had the following three components:

- The business had a web site
- The business connected with its customers over the web
- The business connected with its suppliers over the web

Sample for the study consisted of brick and mortar organizations conducting e-business. Basically, we selected companies that used the Internet as a sales channel or as a supportive channel of business for their brick and mortar business. To be eligible for our sample, the firm had to have an office in Canada. The sample included both public and private firms.

5.4 Data Collection Method

The unit of analysis for this study was the brick and mortar firm carrying out e-business. An individual who was either responsible for the e-business initiative or who was involved with the e-business initiative within the firm at the time of the survey was the respondent for the study. From the database as well as from the particular organization's web site, the name of the contact person was located. In some cases, if no contact person was found, then a general email was sent to the web master or the human

resource contact of that particular organization. Once the name of the contact person was found, the person was contacted by email or phone. In some cases, if the person agreed to respond, email was followed by a phone call. In many cases we also asked the contact person to forward the details of the survey to the right person they thought would be able to answer the survey. The time frame for surveying ranged from March to June 2002.

Web-based as well as paper-based surveys were used for the collection of data. The web based approach resulted in access to a large population of individuals. We were able to achieve the benefits of using the web-based approach such as the savings in both time and money (Schmidt, 1997). Schmidt (1997) in his study found that web surveys benefit both survey respondent and administrator of the survey through the use of dynamic or interactive forms, and immediate feedback can be instantiated. We support his findings because by using web surveys we could generate instant response. Measures were taken to eliminate the drawbacks such as the potential for missing data, unacceptable responses, duplicate submissions, and web abuse highlighted in his research. The web site where the survey resided was password protected to avoid unauthorized access, and email was sent only to those people whose names were found after some considerable research.

6. Discussion of Results

The results of the study, along with the discussion are presented in this chapter. This chapter consists of five sections. Section 6.1 explains the descriptive statistics performed on the data. Section 6.2 deals with the internal consistency tests and the Section 6.3 discusses the measurement of the dependent variable of e-business success. Section 6.4 deals with the correlation analysis and the hypotheses testing and the Section 6.5 explains the regression analysis performed on the data.

The objective of this research was to determine the critical success factors of e-business. The analysis done to achieve the objective was quantitative, and was performed with the help of a statistical package, SPSS version 9.0.

The respondents were asked to rate their level of agreement on a five point Likert scale on the 64 variables (Appendix IV), measuring 47 elements, for e-business success (Appendix III). Based on similarity and the internal consistency test, these 64 variables were grouped into 11 broad categories or factors, as we call them throughout this research. For example, top management support factor included these four variables: top management's commitment towards e-business initiative, their role in mobilizing the work force, their realistic view of the investments involved in e-business, and their active role in implementing the e-business strategy.

The 11 factors are:

1. Customer Focus
2. e-business Organizational Culture
3. Top Management Support
4. Supplier Orientation

5. Strong e-leadership
6. Suitable e-business Technical Infrastructure
7. Effective Web site Design and Content Management
8. e-business Strategy
9. Trust
10. Privacy
11. Security

Before presenting the results it is necessary to mention that this is an exploratory study with a limited sample size of 24. We randomly selected 150 brick and mortar firms doing e-business from the various databases. The survey process resulted in the response rate of 16%. This restricts the performance of a very rigorous statistical analysis on the data collected. Researchers have done their best efforts to derive the maximum meaning out of the data. However, results have to be treated with caution.

6.1 Descriptive Statistics

General observations are presented in the form of descriptive statistics. Descriptive statistics provide initial insights into the data so that a better description of the situation can be made and a better understanding can be created with the data set. Descriptive statistics are shown in the form of tables from 6.1 to 6.27.

As mentioned earlier, the sample size for this study is 24. Out of the 24 organizations surveyed, 70.8% had more than 1000 employees (Table 6.1). This indicates that a large proportion of the data set belonged to large organizations.

Table 6.1- Size of the Organization in Terms of Number of Employees

No.	Category	% Responses
1	Less than 10	12.5
2	10-50	8.3
3	51-100	4.2
4	101-500	0
5	501-1000	4.2
6	More than 1000	70.8

From a sales point of view, 45.5% of the organizations in the data set had sales of greater than 500 million in the year 2001 (\$US), followed by 13.6% between 100 to 500 million (Table 6.2). The results presented in this and the subsequent sections will therefore reflect, to some extent, the view of large organizations.

Table 6.2- Sales of the Organization in the Year 2001 (\$US)

No	Category	% Responses
1	Under 10 million	27.3
2	10 to 25 million	9.1
3	25 to 50 million	4.5
4	50 to 100 million	0.0
5	100 to 500 million	13.6
6	Greater than 500 million	45.5

Respondents were asked to state the priority level assigned to e-business initiatives within their organization. Critical priority was at the top most position with 56.5% of the organizations surveyed, followed by high priority at 26.1% (Table 6.3). This statistic clearly shows that the e-business initiatives hold top priorities within the organizations.

Table 6.3- Priority Level Assigned to e-business within Organization

No.	Category	% Responses
1	Critical	56.5
2	High	26.1
3	Moderate	13.0
4	Low	4.3
5	Not a Priority	0.0

Respondents were also asked at what stage their e-business initiatives were, and 54.2% of the respondents reported that their organizations were in the managing stage of e-business initiatives. Implementing the e-business initiative stage was second with 37.5% (Table 6.4). Only a few of the respondents were evaluating or assessing their e-business needs.

Table 6.4- Stage of the Organization with Respect to e-business Initiative

No.	Category	% Responses
1	Evaluating or assessing	8.3
2	Planning or developing	0.0
3	Implementing	37.5
4	Managing	54.2

A considerable amount, approximately 70% of the organizations surveyed, had a separate group for deploying e-business (Table 6.5). This can also be understood from the fact that the data set had a large proportion of big organizations.

Table 6.5- Separate Group for Deploying e-business

No.	Category	% Responses
1	Yes	69.6
2	No	30.4

As expected, 72.7% of the organizations surveyed used web for business-to-business purposes, business to customers' purposes, providing information about the company on the web as well as an Intranet (Table 6.6). This suggests that most of the organizations are trying to fully exploit the potential of the web.

Table 6.6- How does the Organization Use Web

No.	Category	% Responses
1	Information and intranet	13.6
2	B2B, B2C and Information	4.5
3	B2B, B2C, Information and Intranet	72.7
4	B2C, Information and Intranet	4.5
5	B2B, Information and Intranet	4.5

Most of the firms, approximately 60%, had an international focus for the markets for their products and services, followed by 34% that had a local, national, and international focus for the markets for their products and services (Table 6.7).

Table 6.7- Market Scope

No.	Category	% Responses
1	National	8.3
2	International	58.3
3	Local, national and International	33.3

We decided to capture the perception of the respondents as to what they felt about their organization's e-business success. They were asked two questions related to this. The first question was whether they considered their e-business successful, and the second was whether their organization was able to achieve the goals and mission of the e-business initiatives. Results indicate that respondents were cautious in answering those two questions: 41.7% preferred to answer neutral for the first question, and 37.5% preferred to answer neutral for the second question (Table 6.8 and Table 6.9). This also indicates that most of the respondents were skeptical in calling their e-businesses successful.

Table 6.8- Five Success Measures and Perception of e-business Success

Success Measures	% Responses				
	To a Great Extent	Very	Neutral	Not Very	Not At All
Improved ROI	29.2	29.2	33.3	0.0	8.3
Improved Profitability	25.0	33.3	33.3	0.0	8.3
Improved Business Processes	29.2	45.8	20.8	0.0	4.2
Improved Flexibility	25.0	41.7	25.0	4.2	4.2
Improved Product & Service Innovation	29.2	37.5	29.2	0.0	4.2
Perception of e-business Success	20.8	33.3	41.7	4.2	0.0

Table 6.9- How Many Organizations could Achieve the Goals and Mission of the e-business Initiatives

No.	Scale	% Responses
1	To a Great Extent	16.7
2	Very	37.5
3	Neutral	37.5
4	Not Very	8.3
5	Not At All	0.0

The findings of this study somewhat match with an online survey conducted by the General Management Technologies. They found that 46% of the respondents characterized their organizations' e-business initiatives as "very unsuccessful" or

"somewhat unsuccessful." Only 38% of the study participants reported achieving any degree of e-business success, with the remainder (16%) citing only "neutral" results⁹.

6.1.1 Factor 1: Customer Focus

The importance of customer focus in the success of e-business has been highlighted throughout literature (Barua *et al.*, 2000; Han and Noh, 2000). When the respondents were asked their perception about the importance of customer focus for e-business approximately 90% of them considered it to be extremely important. Table 6.10 presents the results of the importance of customer focus related variables for e-business.

Table 6. 10 - Percentage, Mean and Standard Error for Customer Focus Related Variables

Number	Variable Name	% Response							
		*Rating Scale							
		1	2	3	4	5	6	Mean	**S.E
1.	CUSTCARE	54.2	37.5	4.2	4.2	0	0	1.59	.16
2.	CUSTMGMT	41.7	25	20.8	3	0	0	2.05	.22
3.	CUSTPERS	54.2	29.2	8.3	8.3	0	0	1.70	.20
4.	CUSTVAL	62.5	20.8	12.5	4.2	0	0	1.59	.18
5.	CUSTAWAR	37.5	33.3	12.5	8.3	4.2	0	2.04	.24

* 1=Agree Strongly, 2=Agree Somewhat, 3=Neither Agree Nor Disagree, 4=Disagree Somewhat, 5=Disagree Strongly

**S.E=Standard Error

CUSTCARE-Providing customer care, CUSTMGMT- practicing the knowledge management, CUSTPERS- providing customization and personalization, CUSTVAL- value addition to customers, CUSTAWAR- customer awareness of IT applications.

⁹ <http://www.gmtconsulting.com/publications/news/lack.htm>

As can be seen from Table 6.10, value addition to customers (CUSTVAL) is perceived by the organizations to be the most important factor, as 62.5% of the respondents agreed strongly with CUSTVAL being important for their organization's e-business quest. The mean score of 1.59 indicates that on average organizations perceived CUSTVAL as key to e-business success.

The other variables, mainly providing customer care (CUSTCARE) and providing customization and personalization (CUSTPERS) to customers, were also perceived important by the respondents in impacting success. This can also be inferred from the mean score of 1.59 and 1.70 respectively for CUSTCARE and CUSTPERS, which are below 2 (where 1 stands for agree strongly). The results reflect the view of the authors provided in the literature where they have given special emphasis on achieving success with customer care and value addition to customers (Raphael, 2000; Wanninger, 1998).

It is surprising to see that the factor of practicing knowledge management to target the right customer by identifying their needs (CUSTMGMT) has not come very high on the list as compared to the other three factors discussed above.

Not many respondents perceived customer awareness of IT applications (CUSTAWAR) as one of the key factors for e-business success. The study conducted by Barua *et al.* (2000) found that customer readiness and awareness of IT applications had a positive impact on customer related operational excellence. However, we feel that the result for low emphasis on CUSTAWAR could be that connectivity, as well as the awareness of customer has increased over the past 2 years.

6.1.2 Factor 2: e-business Organizational Culture

The e-business organizational culture factor exhibits the characters of employee focus within an organization. Table 6.11 presents the results of the importance of e-business culture related variables for e-business.

Table 6.11 - Percentage, Mean and Standard Error for e-business Culture Related Variables

Number	Variable Name	% Response							
		*Rating Scale							
		1	2	3	4	5	6	Mean	**S.E
1.	CULTINN	50.0	29.2	16.7	4.2	0	0	1.8333	.2383
2.	CULTCUST	45.8	33.3	20.8	0	0	0	1.7500	.1621
3.	CULTSTRA	20.8	37.5	33.3	8.3	0	0	2.2917	.1853
4.	EMPUNDER	16.7	37.5	29.2	16.7	0	0	2.4583	.1994
5.	TRANWORK	20.8	25	29.2	20.8	4.2	0	2.6250	.2394
6.	EDUTRAIN	8.3	41.7	12.5	33.3	4.2	0	2.833	.2305
7.	EVISION	16.7	29.2	20.8	33.3	0	0	2.7083	.2290
8.	SHARKNOW	45.8	37.5	12.5	4.2	0	0	1.7500	.1729
9.	VIRTUALT	33.3	25	20.8	12.5	4.2	4.2	2.4167	.2882

* 1=Agree Strongly, 2=Agree Somewhat, 3=Neither Agree Nor Disagree, 4=Disagree Somewhat, 5=Disagree Strongly

**S.E=Standard Error

CULTINN- culture with continuous innovation and learning, CULTCUST- customer centric organizational culture, CULTSTRA- consistency between the organizational culture and the e-business strategy, EMPUNDER- employees understanding of e-business benefits, TRANWORK -transformation of the work place, EDUTRAIN-provision of adequate education and training for e-business, EVISION- communication of e-business vision to the employees SHARKNOW- employees are encouraged to share knowledge and information, VIRTUALT- use of virtual teams.

As can be seen from Table 6.11 on the previous page, 50 % of the respondents rated organizational culture with continuous innovation and learning (CULTINN) as the top most factor of focus inside their organization. It was closely followed by customer centric organizational culture (CULTCUST) and the culture where employees are encouraged to share knowledge and information (SHAREKNOW) with 45.8% each. This can also be inferred from the mean score of 1.833, 1.75 and 1.75 respectively. These findings also coincide with the view provided by many authors throughout literature (Crossan and Spracklin, 2001; Saltzman and Luthans, 2001).

The other variables, mainly use of virtual teams (VIRTUALT) within e-business division, consistency between the organizational culture and the e-business strategy (CULTSTRA), and transformation of the work place (TRANWORK) also found considerable mention among the respondents.

Surprisingly, factors such as employees' understanding of e-business benefits (EMPUNDER), and successful communication of e-business vision to the employees, were not the top-most priority for the respondents.

Only 8.5 % of the respondents ranked provision of adequate education and training for e-business (EDUTRAIN) as the important concern within the organization. The findings indicate that organizations are not doing enough in the area of developing the skills of their employees, and this might prove detrimental in their pursuit for e-business success.

6.1.3 Factor 3: Top Management Support

Top management support is an important and a crucial ingredient for any successful initiative. When the respondents were asked their perception about the importance of top management support for e-business, approximately 87% considered it to be important. Table 6.12 presents the results of the importance of top management support related variables for e-business.

Table 6.12 - Percentage, Mean and Standard Error for Top Management Support Related Variables

Number	Variable Name	% Response							
		*Rating Scale							
		1	2	3	4	5	6	Mean	**S.E
1.	TOPCOMMU	58.3	29.2	4.2	8.3	0	0	1.6250	.1886
2.	TOPMOBIL	50.0	37.5	4.2	8.3	0	0	1.7083	.1853
3.	TOPINVES	37.5	50.0	4.2	4.2	4.2	0	1.8750	.2025
4.	TOPIMPLE	41.7	33.3	16.7	8.3	0	0	1.9167	.1989

* 1=Agree Strongly, 2=Agree Somewhat, 3=Neither Agree Nor Disagree, 4=Disagree Somewhat, 5=Disagree Strongly

**S.E=Standard Error

TOPCOMMU- top management is committed towards e-business initiative, TOPMOBIL- top management plays an important role in mobilizing the work force, TOPINVES- top management has realistic view of the investments involved in e-business, TOPIMPLE- top management plays an active role in implementing the e-business strategy

As can be seen from Table 6.12, 58.3 % of the respondents strongly agreed that top management is committed towards e-business initiative (TOPCOMMU), which also has a mean score of 1.62. TOPCOMMU is closely followed by TOPMOBIL, which means that 50% of the respondents strongly agreed that top management plays an

important role in mobilizing the work force. These findings reaffirm the commitment senior managers have to take their business to new heights.

Realistic view of the investments involved in e-business by top management (TOPINVES), and their active role in implementing the e-business strategy (TOPIMPLE), closely followed the other two variables, with 37.5 % and 41.7% of the respondents agreeing strongly in favor of these factors, respectively.

6.1.4 Factor 4: Supplier Orientation

As mentioned in the literature review section 2.1, the difference between e-commerce and e-business terminology is that for e-business, the whole value chain is considered important and the integration among its components holds the key for e-business success. Thus, the importance of focusing on suppliers for the smooth functioning of the value chain cannot be neglected. When the respondents were asked for their perception about the importance of supplier orientation for e-business, approximately 75% of the respondents considered it to be important. Table 6.13 presents the results of the importance of supplier orientation related variables for e-business.

29.5% of the respondents agreed strongly with the suppliers' role in dealing with the rapidly changing business environment (SUPCHANG), the suppliers' ability to make available expanded skills and resources (SUPRESOU) and the suppliers' help in expanding the network (SUPNETWO) for their respective e-businesses. Our sample mainly consisted of large firms, and studies have shown that large firms have greater bargaining power and are often able to encourage co-operation among channel members (Coltman *et al.*, 2001).

Table 6.13 - Percentage, Mean and Standard Error for Supplier Orientation Related Variables

Number	Variable Name	% Response							
		*Rating Scale							
		1	2	3	4	5	6	Mean	**S.E
1.	SUPCHANG	29.2	33.3	16.7	4.2	4.2	0	2.5833	.3401
2.	SUPRESOU	29.2	33.3	12.5	8.3	4.2	0	2.6250	.3448
3.	SUPNETWO	29.2	20.8	20.8	12.5	4.2	12.5	2.7917	.3457
4.	SUPSCALE	12.5	29.2	33.3	8.3	4.2	12.5	3.0000	.3069
5.	SUPCOSTS	16.7	25.0	33.3	8.3	4.2	12.5	2.9583	.3155
6.	SUPEBUSI	25.0	25.0	16.7	4.2	16.7	8.3	2.8696	.3573
7.	SUPINTEG	8.3	20.8	29.2	4.2	16.7	16.7	3.5217	.3436
8.	SUPCONFL	4.2	20.8	37.5	12.5	4.2	20.8	3.5417	.3127
9.	SUPSHARE	8.3	25.0	37.5	8.3	8.3	12.5	3.2083	.3008

* 1 =Agree Strongly, 2 =Agree Somewhat, 3 =Neither Agree Nor Disagree, 4 =Disagree Somewhat, 5 =Disagree Strongly, 6 =N/A or Don't Know

**S.E=Standard Error

SUPCHANG-supplier's role in dealing with the rapidly changing business environment, SUPRESOU- supplier's ability to make available expanded skills and resources, SUPNETWO-supplier's help in expanding the network, SUPSCALE- help in rapidly reaching scale, SUPCOSTS- supplier's help in reducing costs, SUPEBUSI- most of their suppliers were doing e-business, SUPINTEG- organization's systems were integrated with their suppliers systems, SUPCONFL- e-business resulted in easy conflict resolution with suppliers, SUPSHARE-e-business results in increased sharing of information with suppliers

Respondents were also asked to express their level of agreement on whether most of their suppliers were doing e-business (SUPEBUSI), whether suppliers were helping them in reducing costs (SUPCOSTS), and whether suppliers' were helping in rapidly reaching scale (SUPSCALE). Only 25% of the respondents strongly agreed with

SUPEBUSI, and 16.7% and 12.5% respondents strongly agreed with SUPCOSTS and SUPSCALE, respectively.

Few (8.3%) respondents felt that their organization's systems were integrated with their suppliers systems (SUPINTEG) and a few (8.3%) respondents felt that e-business resulted in easy conflict resolution with suppliers (SUPCONFL). Non-integration with the supplier's systems could become a hindrance in smooth functioning in the e-business value chain. Contradictory to the normal belief and literature viewpoint (Barua *et al.*, 2000) that Internet allows for sharing of information in a cost effective manner, our study found that only 8.3% of the respondents felt that e-business results in increased sharing of information with suppliers (SUPSHARE).

6.1.5 Factor 5: Strong e-leadership

The global economy is undergoing a major transition as a result of advancements in information technology and the way organizations are conducting business. This transition requires a change in thinking by the leadership in order for them to adapt to the new emerging realities (Rayport and Sviokla, 1995). This change in leadership has not been clearly reflected in the results of this study. When the respondents were asked their perception about the importance of strong e-leadership for e-business success, approximately 90% of the respondents considered it to be important. Table 6.14 presents the results of the importance of e-leadership related variables for e-business.

Table 6.14 - Percentage, Mean and Standard Error for Strong e-leadership Related Variables

Number	Variable Name	% Response							
		*Rating Scale							
		1	2	3	4	5	6	Mean	**S.E
1.	CHAMPION	25.0	29.2	29.2	8.3	4.2	4.2	2.5000	.2692
2.	CHAMPCOM	12.5	37.5	25.0	12.5	12.5	0	2.8750	.3028
3.	CHAMPINT	16.7	33.3	29.2	8.3	0	12.5	2.7917	.3068
4.	CHAMPTEC	25.0	41.7	16.7	8.3	0	8.3	2.4167	.2882

* 1=Agree Strongly, 2=Agree Somewhat, 3=Neither Agree Nor Disagree, 4=Disagree Somewhat, 5=Disagree Strongly

**S.E=Standard Error

CHAMPION-having a Champion, CHAMPCOM-successful communication of e-business strategies by their leaders, CHAMPINT-leader/champion's role in managing the integration challenges, CHAMPTEC- leader/champion's understanding of the role of various technological changes.

Respondents were asked to rate on a scale of 1 to 5 their level of agreement on having a Champion (CHAMPION), on successful communication of e-business strategies by their leaders to their organization (CHAMPCOM), on leader/champion's role in managing the integration challenges (CHAMPINT), and on leader/champion's understanding of the role of various technological changes (CHAMPTEC). Most of them did not agree strongly with the factors mentioned above. However, they did show some level of agreement. The mean score of over 2.5 for the above factors suggest that the organizations surveyed did not have strong e-leadership for their e-businesses. This is an

interesting finding, as in the literature considerable emphasis has been given on e-leadership for e-business success (Crossan and Spracklin, 2000; Avolio *et al.*, 2001). Also, with 90% of the respondents considering e-leadership as important, it is surprising to see a low emphasis on the above-mentioned factors.

6.1.6 Factor 6: Suitable e-business Technical Infrastructure

Almost all the respondents considered sound technical infrastructure as the key for e-business success. Privacy and security turned out to be the main factors that the respondents were completely satisfied with (Table 6.15). This was followed by Backbone bandwidth and cost (COST), performance (PERFORMA), flexibility (FLEXIBIL), customization (CUSTOMIZ), and usability (USABILLI).

None of the respondents were completely satisfied with their organizations' streamlined operations (STREAMOP), and only a few of them were completely satisfied with upgradability (UPGRADIB), integration with the existing applications (INTEGRAT), and reliability (RELIABIL). These findings did not support the notion that reliability, streamlined operations, and upgradability are extremely important for the net-based businesses (Venkataraman, 2000). Palmer (2000) pointed out that multiplicity of infrastructure providers could be one of the reasons for lack of control on these factors for some organizations.

Table 6.15 - Percentage, Mean and Standard Error for e-business Technical Infrastructure Related Variables

Number	Variable Name	% Response							
		*Rating Scale							
		1	2	3	4	5	6	Mean	**S.E
1.	BANDWIDTH	33.3	37.5	12.5	16.7	0	0	2.1250	.2196
2.	PRIVACY	54.2	33.3	8.3	4.2	0	0	1.6250	.1682
3.	COST	16.7	41.7	33.3	8.3	0	0	2.3333	.1772
4.	PERFORMA	16.7	62.5	12.5	8.3	0	0	2.1250	.1628
5.	RELIABIL	8.3	62.5	16.7	8.3	4.2	0	2.3750	.1886
6.	FLEXIBIL	16.7	41.7	20.8	20.8	0	0	2.4583	.2083
7.	CUSTOMIZ	16.7	58.3	16.7	8.3	0	0	2.1667	.1667
8.	USABILLI	16.7	50.0	16.7	12.5	0	0	2.2609	.1909
9.	SECURITY	50.0	33.3	12.5	4.2	0	0	1.7083	.1753
10.	INTEGRAT	12.5	50.0	16.7	12.5	8.3	0	2.5417	.2330
11.	STREAMOP	0	54.2	25.0	20.8	0	0	2.6667	.1667
12.	UPGRADIB	12.5	50.0	33.3	4.2	0	0	2.2917	.1532

* 1 =Completely Satisfied, 2 =Somewhat Satisfied, 3 =Neutral, 4 =Somewhat Dissatisfied, 5 = Completely Dissatisfied

**S.E=Standard Error

BANDWIDTH- backbone bandwidth, PRIVACY-privacy, COST-cost, PERFORMA-performance, RELIABIL-reliability, FLEXIBIL-flexibility, CUSTOMIZ-customization, USABILLI-usability, SECURITY-security, INTEGRAT-integration with existing applications, STREAMOP- streamlined operations, UPGRADIB-upgradability

6.1.7 Factor 7: Effective Web site Design and Content Management

Implementing an efficient and scalable e-business environment rests on the performance of the web site of the organization. Approximately 96% of the respondents considered web site design and content management as important for e-business. Table 6.16 presents the results of the importance of web site design and content management related variables for e-business.

Table 6.16 - Percentage, Mean and Standard Error for Web site Design and Content Management Related Variables

Number	Variable Name	% Response						Mean	**S.E
		* Rating Scale							
		1	2	3	4	5	6		
1.	WEBEASE	45.8	37.5	12.5	0	4.2	0	1.7917	.1994
2.	WEBINF	50.0	33.3	12.5	4.2	0	0	1.7083	.1753
3.	WEBPROD	45.8	25.0	25.0	4.2	0	0	1.8750	.1933
4.	WEBSERVI	33.3	8.3	37.5	4.2	16.7	0	2.6250	.2937
5.	WEBRETUR	16.7	8.3	37.5	4.2	29.2	0	3.2174	2.5652
6.	WEBGRAPH	25.0	20.8	33.3	4.2	12.5	0	2.5652	.2154
7.	WEBRESOU	25.0	20.8	37.5	12.5	0	0	2.3913	.2154
8.	WEBBRAND	50.0	20.8	16.7	8.3	4.2	0	1.9583	.2444

* 1=To a Great Extent, 2=Very, 3=Neutral, 4=Not Very, 5=Not At All

**S.E=Standard Error

WEBEASE- web site is easy to use and read, WEBINF- web site provides company information, WEBPROD- web site provides detailed product specifications, WEBSERVI- web site provides service guarantee and warranty policies, WEBRETUR- web site provides easy return policy for goods, WEBGRAPH- web site uses graphics only when required, WEBRESOU- we have spend enough resources on developing content, WEBBRAND- emphasizing importance of branding

Respondents were asked to rate the applicability of the factors related to web site design and content development on a scale of 1 to 5. The top ranked variables were: providing company information on the web site (WEBINF), emphasizing the importance of branding when selling goods/services online (WEBBRAND), ease of use of web site (WEBEASE), and providing detailed product specification (WEBPROD). The high rating of importance of branding in the e-business world can be explained from the fact that buyers on the net will continue to pay attention towards brand name in order to minimize search cost and build trust (Coltman *et al.*, 2001).

Provision of product and service guarantee and warranty policies (WEBSERVI) on the web site, use of graphics and animated graphics only if they are an integral part of the products and services offered (WEBGRAPH), and spending of resources on developing the content for the web site (WEBRESOU) were not the top choices by the respondents with the mean score of 2.62, 2.56 and 2.39, respectively.

A factor that came very low on the respondents' list was the provision of an easy-return policy of goods purchased online (WEBRETURN). 29.2% of the respondents said that they do not do it at all. This variable is of considerable importance when the question of customer convenience arises: for example, Barnes and Nobel's convenient return policy and human interaction has resulted in customer satisfaction, to a great extent (Coltman *et al.*, 2001). This variable being very low suggests that organizations are not paying enough attention on a convenient goods-return policy for their customers.

6.1.8 Factor 8: e-business Strategy

There is no single optimal business strategy for e-business, as the sources of competitive advantage are different for different industries or markets (Shin, 2001).

However, investing in the factors discussed below may benefit organizations across all industries and markets. Approximately 88% of the respondents considered having an e-business strategy important for e-business. Table 6.17 presents the results of the importance of e-business strategy related variables for e-business.

Respondents were asked to rate their level of agreement on variables related to their organization's e-business strategy. Though ESTRATEGY was ranked the topmost, only 37.5% of the respondents agreed strongly with having a formal e-business strategy in place. 33.3% of the respondents felt that top management played an important role in designing an e-business strategy (STRATTOP) and that the e-business strategy is flexible (STRATFLE). Thus, the findings suggest that developing an effective e-business strategy is not an easy task for organizations embarking on the road to the online world.

The other two factors that found strong agreement among the respondents were strategic thinking and vision (STRATVIS) and inclusion of web site and brand management in the e-business strategy (STRATWEB).

Only 16.7% of the respondents strongly agreed that their e-business strategy contained a customer service plan. Mean score of above 4 indicates that a customer service plan does not find enough mention in the e-business strategies of the organization surveyed.

Allocation of resources (STRATRES), marketing plans (STRATMAR), and availability of technology choices (STRATTEC) in the e-business strategy also stand low as only 12.5% of the respondents agreed strongly with the elaboration of these factors in the e-business strategy. Only 8.3% of the respondents agreed strongly that their e-business strategy elaborates partners and suppliers (STRATSUP), fulfillment system

(STRATFUL), and staffing and management plans (STRATMG). A mean score of approximately 3.0 was observed in all the cases.

Table 6.17 - Percentage, Mean and Standard Error for e-business strategy Related Variables

Number	Variable Name	% Response						Mean	**S.E
		* Rating Scale							
		1	2	3	4	5	6		
1.	ESTRATEG	37.5	41.7	4.2	12.5	0	4.2	2.0833	.2618
2.	STRATTOP	33.3	41.7	12.5	4.2	0	8.3	2.2083	.2885
3.	STRATVIS	29.2	37.5	20.8	4.2	0	8.3	2.2083	.2882
4.	STRATFLE	29.2	37.5	20.8	4.2		8.3	2.3333	.2866
5.	STRATRES	12.5	37.5	37.5	4.2	0	8.3	2.6667	.2601
6.	STRATMAR	12.5	20.8	45.8	8.3	0	12.5	3.0000	.2887
7.	STRATWEB	25.0	33.3	25.0	4.2	0	12.5	2.5833	.3180
8.	STRATFUL	8.3	33.3	37.5	8.3	0	8.3	2.8261	.2641
9.	STRATCUS	16.7	29.2	29.2	8.3	0	12.5	4.1250	1.3342
10.	STRATSUP	8.3	33.3	29.2	12.5	4.2	12.5	3.0833	.3005
11.	STRATTEC	12.5	41.7	20.8	8.3	4.2	12.5	2.8750	.3146
12.	STRATMG	8.3	25.0	50.0	4.2	4.2	8.3	2.9583	.2588

* 1=Agree Strongly, 2=Agree Somewhat, 3=Neither Agree Nor Disagree, 4=Disagree Somewhat, 5=Disagree Strongly, 6=N/A or Don't Know

**S.E=Standard Error

ESTRATEG- having a e-business strategy, STRATTOP- top management played an important role in designing an e-business strategy, STRATVIS- strategic thinking and vision, STRATFLE- e-business strategy is flexible, STRATRES- elaborates on allocation of resources, STRATMAR- inclusion of marketing plans, STRATWEB- inclusion of web site and brand management, STRATFUL- inclusion of fulfillment system, STRATCUS- elaborates on customer service plan, STRATSUP- elaborates partners and suppliers, STRATTEC- elaborates on availability of technology choices, STRATMG- elaborates on staffing and management plans

To obtain a competitive advantage over its competitors and achieve success, firms need to carefully look at the contents of their e-business strategies and focus more on the customer service, marketing, and promotion plans. These have to be different than the ones used in the traditional setting of businesses (Shin, 2001).

6.1.9 Factor 9: Trust

Building confidence among consumers is the most critical aspect in e-commerce. Our study supports this, as 91.7% of the respondents considered customer trust as extremely important for conducting e-business. Table 6.18 presents the results of the importance of trust for the success of e-business.

Table 6.18 - Percentage, Mean and Standard Error for Trust Variable

Number	Variable Name	% Response							
		* Rating Scale							
		1	2	3	4	5	6	Mean	**S.E
1.	TRUST	91.7	4.2	0	4.2	0	0	1.1667	.1300

* 1=Extremely Important, 2=Somewhat Important, 3=Neutral, 4=Not Very Important, 5=Not At All Important

**S.E=Standard Error

The mean score of 1.16 also indicates the importance of trust for organizations conducting e-business. Despite customers' trust being considered highly important from an e-business point of view, studies have indicated that consumer confidence in conducting transactions online, especially cross border transactions, remains low (Noll,

2001). Firms conducting e-business are aware of the fact that the physical distance and lack of physical representation is a big impediment to their growth and the goal for them is to promote confidence among customers and fight mistrust (Noll, 2001).

6.1.10 Factor 10: Privacy

From the customer point of view, the need for privacy for electronic medium such as the Internet is intense (Hoffman *et al.*, 1999). Our findings suggest that even from the organization's point of view, the need for protecting the privacy of customers is intense. Table 6.19 presents the results of the importance of privacy for the success of e-business.

Table 6.19- Percentage, Mean and Standard Error for Privacy Variable

Number	Variable Name	% Response						Mean	**S.E
		* Rating Scale							
		1	2	3	4	5	6		
1.	PRIVACY	87.5	12.5	0	0	0	0	1.1250	.0689

* 1=Extremely Important, 2=Somewhat Important, 3=Neutral, 4=Not Very Important, 5=Not At All Important

**S.E=Standard Error

Respondents were asked their perception of the importance of privacy for their e-business initiatives and as expected, 87.5% of them rated it to be extremely important. However, when they were asked how satisfied they were with their organization's privacy policies, only 54.2% were completely satisfied. This disparity can be explained

by the fact that though organizations understand the importance of protecting privacy they are not doing enough in that direction.

Table 6.20- Privacy Policy

No.	Category	% Responses
1	Yes	82.6
2	No	17.4

When asked whether their organization had a privacy policy for collecting customer data, 82.6% of the respondents answered affirmatively (Table 6.20). 81 % of the respondents said they keep personal data for internal use only (Table 6.21). None of the respondents said the customer data gathered through the web site was shared freely.

Table 6.21- Policy Related to Sharing Personal Data

No.	Category	% Responses
1	No personal data	4.8
2	For internal use only	81.0
3	Shared with carefully screened suppliers	4.8
4	Others	9.5

6.1.11 Factor 11: Security

Table 6.22 presents the results of the importance of security for the success of e-business.

Table 6.22- Percentage, Mean and Standard Error for Security Variable

Number	Variable Name	% Response						Mean	**S.E
		1	2	3	4	5	6		
1.	SECURITY	87.5	12.5	0	0	0	0	1.1250	.0689

* 1 =Extremely Important, 2 =Somewhat Important, 3 =Neutral, 4 =Not Very Important, 5 =Not At All Important

**S.E=Standard Error

Respondents were asked their perception of the importance of security for their e-business initiatives and, as expected, 87.5% of them rated it to be extremely important.

All the respondents, i.e. 100%, said that their organization used a secured method for transactions online (Table 6.23).

Table 6.23- Secured Transaction Method

No.	Category	% Responses
1	Yes	100
2	No	0.0

This clearly states the importance of security in the e-business world. Also 100% of e-businesses were protected by a firewall (Table 6.24). 68.2% of the organizations used site certificates (Table 6.25). 35% used a secured socket layer, followed by 30% with independent public key encryption for secured transactions (Table 6.26).

Table 6.24- e-business Protected by Firewall

No.	Category	% Responses
1	Yes	100
2	No	0.0

Table 6.25- Organizations Using Site-Certificates

No.	Category	% Responses
1	Yes	68.2
2	No	31.8

Table 6.26- How are the Transactions Encrypted

No.	Category	% Responses
1	No encryption	5.0
2	SSL	35.0
3	IPKE	30
4	SSL and IPKE	25
5	SSL and IPKE and Others	5

Table 6.27 Summary of Variables Considered Important for e-business Success

No.	Variable	Mean
1.	Customer Focus	1.6
2.	e-business Organizational Culture	2.2
3.	Top Management Support	1.9
4.	Supplier Orientation	2.2
5.	Strong e-leadership	2.6
6.	Suitable e-business Technical Infrastructure	2.2
7.	Web Site Design and Content Management	2.1
8.	e-business Strategy	2.5
9.	Trust	1.1
10.	Privacy	1.6
11.	Security	1.7

6.2 Internal Consistency Tests

Internal consistency test performed for this research was Cronbach's alpha. This test measures the internal consistency of the survey instrument where subjects respond to questions on a scale (e.g. 1-5 for this research). Cronbach's alpha can range between 0 and 1. A Cronbach's alpha of 0.60 and above indicates that the survey instrument is internally consistent (Stevens, 1996). All the 8 factors were tested for internal

consistency using Cronbach's alpha. Table 6.28 shows that all the 8 factors: 1) Customer focus, 2) e-business organizational culture, 3) Top management support, 4) Supplier orientation, 5) Strong e-leadership, 6) Suitable e-business technical infrastructure, 7) Effective web site design and content management, and 8) e-business strategy are internally consistent, with Cronbach's alpha over 0.8 for all the factors.

Table 6.28- Internal Consistency Test

Factor	Cronbach's alpha
1. Customer Focus	0.8156
2. e-business Organizational Culture	0.8628
3. Top Management Support	0.9019
4. Supplier Orientation	0.9740
5. Strong e-leadership	0.9173
6. Suitable e-business Technical Infrastructure	0.9153
7. Effective Web site Design and Content Management	0.8465
8. e-business Strategy	0.8140

6.3 Measuring the Dependent Variable: e-business Success

The dependent variable for the study is the e-business success. We have studied the influence of the independent variables on this dependent variable. For the purpose of this study, we selected five measures for e-business success, namely

- Increased Return On Investment

- Increased Profitability
- Improved Business Processes
- Improved Flexibility
- Improved Product and Service Innovation

These measures were taken from the e-commerce and balanced scorecard literature. These were further grouped into two categories, one measuring the financial outcomes and the other measuring the internal improvements such as flexibility. When we looked at the correlation between these two combined success measures we found that they were highly correlated. We decided to group them together and use one consolidated success measure including the five measures outlined above as the dependent variable for further analysis of data.

6.4 Correlation Analysis

Correlation is a technique to determine to what degree one variable is related to another or the nature of association between two variables (Stevens, 1996). The variables identified in the preceding analysis except for security, privacy, and trust, were grouped into 8 factors. Thus, in order to statistically study the strength of relationship between each of the 8 factors and the e-business success, correlation analysis was performed.

The results of the correlation analysis not only demonstrate the strength of relationship among the variables, but also show whether they are positively or negatively related.

6.4.1 Hypotheses Testing

We tested 8 hypotheses individually to see the results. Given the exploratory nature of the study, we decided to test the hypotheses at both a 0.01 and 0.05 level of significance.

H1: Greater the focus on customers, more likely the e-business success.

The hypothesis was not rejected at 0.01 level of significance, i.e. our results support this hypothesis. Correlation coefficient of 0.565 (Appendix V) suggests that organizations focusing more on customers are more likely to achieve e-business success. The results restate the importance of customer orientation for success in the online world.

H2: Stronger the e-business organizational culture, more likely the e-business success.

The hypothesis was not rejected at 0.01 level of significance, i.e., our data supports this hypothesis. Correlation coefficient of 0.535 (Appendix V) suggests that organizations with the characteristics of e-business culture such as the strong emphasis on sharing information among the employees, provision of training and education to its employees are more likely to achieve e-business success.

H3: Greater the top management support, more likely the e-business success.

The hypothesis was rejected at 0.05 level of significance, i.e., our data does not support this hypothesis. Correlation coefficient of 0.178 (Appendix V) suggests that

greater the top management support does not necessarily mean more e-business success. Further exploration is required in understanding whether top management support is implied for e-business success or there are some other factors that influence the relationship between top management support and e-business success.

H4: Greater the supplier orientation, more likely the e-business success.

The hypothesis was not rejected at 0.05 level of significance, i.e. our data supports this hypothesis. Correlation coefficient of 0.511 (Appendix V) suggests that supplier orientation positively influences e-business success.

H5: Stronger the e-leadership, more likely the e-business success.

The hypothesis was rejected at 0.05 level of significance, i.e., our data does not support this hypothesis. Correlation coefficient of 0.009 (Appendix V) suggests that stronger e-leadership does not result in greater e-business success. The result does not support literature viewpoint, where the importance of e-leadership for e-business success is considered critical. However, further exploration is required in understanding whether e-leadership is implied for e-business success or there are some other factors that influence the relationship between e-leadership and e-business success.

H6: Greater the technical maturity, more likely the e-business success.

The hypothesis was not rejected at 0.01 level of significance, i.e. our data supports this hypothesis. Correlation coefficient of 0.662 (Appendix V) suggests that

organizations with sound technical infrastructure are more likely to succeed in their e-business initiatives.

H7: Greater the efficiency in web site design and content management, more likely the e-business success.

The hypothesis was not rejected at 0.05 level of significance, i.e. our data supports this hypothesis. Correlation coefficient of 0.432 (Appendix V) suggests that organizations with an effective web site design and content management are more likely to achieve success in their e-business initiatives.

H8: Greater emphasis on e-business strategy, more likely the e-business success.

The hypothesis was not rejected at 0.01 level of significance, i.e. our data supports this hypothesis. Correlation coefficient of 0.570 (Appendix V) suggests that organizations that invest enough resources in developing their e-business strategy are more likely to succeed in their e-business initiatives.

H9: Greater the focus on customer service and customer satisfaction, more likely the e-business success, when privacy and trust are high.

It was not possible to test this hypothesis with the small sample size of 24. Further research is recommended with a larger sample size to test this hypothesis using Partial Least Square technique.

H10: Greater the efficiency in web site design and content management, more likely the e-business success, when privacy and trust are high.

It was not possible to test this hypothesis with the small sample size of 24. Further research is recommended with a larger sample size to test this hypothesis using Partial Least Square technique.

H11: Greater the technical maturity, more likely the e-business success, when security, privacy and trust are high.

It was not possible to test this hypothesis with the small sample size of 24. Further research is recommended with a larger sample size to test this hypothesis using Partial Least Square technique.

6.5 Regression Analysis

Multiple regression was carried out to learn about the relationship between the several independent variables and the dependent variable. The dependent variable in our study was the e-business success. The 8 predictor (independent) variables for the model were: 1) Customer focus, 2) e-business organizational culture, 3) Top management support, 4) Supplier orientation, 5) Strong e-leadership, 6) Suitable e-business technical infrastructure, 7) Effective web site design and content management, and 8) e-business strategy. SPSS 9.0 was used to carry out regression analysis. Multiple regression also resulted in identifying the factors critical for e-business success.

We checked for outliers and the missing values and carefully replaced them with the mean values. Independence assumption holds true as the subjects responded independently of one another.

Step Wise method was used to get the best model, i.e., the model with maximum R^2 . R^2 measures the proportion of total variance on the dependent variable that is accounted for by the set of predictors. It tells how well the model fits the data. The final model after running the Step Wise regression consisted of two of the independent variables, namely the suitable technical infrastructure and the e-business strategy. R^2 of 0.545 indicates that 54.5% of the variance in the dependent variable, e-business success is explained by suitable technical infrastructure and e-business strategy.

Correlation coefficient R for the model was 0.738, which shows the degree to which the two independent variables are related to the dependent variable.

The prediction equation for the final model is

$$\text{e-business Success} = 0.283 + 0.522 * \text{Technical Infrastructure} + 0.265 * \text{e-business Strategy}$$

See Appendix VI for details on the Regression Table.

Suitable e-business technical infrastructure and e-business strategy were positively related with the e-business success. This confirms the result obtained in the earlier correlation analysis, where we found positive relation between e-business success and e-business strategy, and e-business success and sound technical infrastructure.

High correlation among the various independent variables resulted in only two variables coming significant in the final model, suitable technical infrastructure and e-business strategy. There was high correlation between customer focus and the two significant variables, between supplier orientation and the two significant variables, web

site design and content management and the two significant variables, and between e-business organizational culture and the two significant variables (Appendix V). Top management support and strong e-leadership were not found correlated with the two significant variables (Appendix V). This confirms the result obtained after the correlation analysis where, the two variables, top management support and strong e-leadership were not found correlated with e-business success. Thus, the study found suitable technical infrastructure and e-business strategy as the critical success factors for e-business.

We asked the respondents about the impact of their e-business initiatives on improving customer satisfaction, improving supplier relationship, improving employee satisfaction, and improving preparedness to drive change. We looked at the correlation matrix (Appendix V) and found that these four variables were seen to influence the way independent variables affect the dependent variable of e-business success. These four measures were highly correlated with the consolidated measure of e-business success. Also all these four variables were highly correlated with e-business strategy. Improved employee satisfaction and improved preparedness to drive change were highly correlated with the suitable technical infrastructure variable.

These result indicate that the e-business strategy factor results in positively influencing the e-business success by improving customer satisfaction, improving supplier relationship, improving employee satisfaction, and improving preparedness to drive change. Suitable technical infrastructure factor results in positively influencing e-business success by improving employee satisfaction and improving preparedness to drive change.

7. Conclusions

This chapter includes conclusion of the study followed by limitations, benefits, and implication of the study and scope for future research.

The main research objective of the study was to find out the critical success factors for e-business and it has been able to do that with considerable success. The sample size for the study was not large and was restricted to Canadian organizations, but we feel that the study has given enough insights into the success measure as well as success factors for e-business.

The findings of the study can be classified into three categories. First of all, the overall picture of e-businesses in Canadian firm was captured. We analyzed the responses of the web based and paper based surveys separately to see any differences in the responses. However, we did not find much difference and thus, we combined the paper based and web based responses for the analysis. Results show the view of mainly large companies as most of the organizations surveyed had sales of greater than 500 million and employed more than 1000 employees. Respondents were very careful in calling their organization successful in their e-business initiatives when they were asked about their perception. One of the reasons we believe could be because they were not sure about the definition of e-business success. When we asked them about the individual criterion we had come up with for measuring success, our dependent variable they were more positive in their viewpoints.

When respondents were asked about their perception of the importance of each of the 11 factors for e-business, they ranked all the factors in the range of 80 to 100%. This shows that the various factors that we identified through literature and grouped into 11

factors were indeed important for the success of e-business. However, when the respondents were asked to individually rank their agreement for all the various factors that make up the broad category of 11 factors, results were not that encouraging. For example, strong e-leadership was considered important by almost 90% of the respondents for e-business, but when it came to how they perceived their organization's e-leadership for conducting e-business a mean score of 2.6 suggests that they were not very positive about it.

Secondly, the hypotheses were tested to see which factors influence e-business success. Out of the 8 hypotheses tested, 6 were accepted and 2 were rejected. Customer focus, supplier orientation, e-business organizational culture, e-business strategy, effective web site design and content management, and suitable technical infrastructure positively influenced e-business success. Top management support and strong e-leadership factors did not significantly influence e-business success. One of the interesting findings of the study was that the top management support and strong e-leadership did not seem to influence e-business success. This can be interpreted by the argument that the top management support and strong e-leadership are implied for successfully running an e-business. These results indicate that top management support and strong e-leadership no longer remain critical success factors for e-business. The study conducted by Earl and Feeny (2000) support this result, where they found that the backing from the top for e-business transformation is essential, but at the day-to-day level responsibilities must be delegated (Earl and Feeny, 2001).

Thirdly, multiple regression was performed to identify the factors critical for e-business success. The results of the regression analysis performed on the 8 factors

(predictor variables) and the e-business success (dependent variable) showed that e-business strategy and suitable technical infrastructure were the critical success factors for e-business. We found in the results that the factors: 1) customer focus, 2) supplier orientation, 3) e-business organizational culture, and 4) web site design and content management were highly correlated with e-business strategy and sound technical infrastructure. This indicates that these 4 above-mentioned factors can also be considered critical for e-business success. However, the results have to be treated with caution because of the limitation of small sample size.

The study resulted in defining a measure of success for the firms conducting e-business. As mentioned earlier, financial measures are not the only criteria for measuring success, and the success measure should also include customer, internal business processes, and innovation and learning criterion. A consolidated e-business success measure including five sub-measures was designed for the purpose of this study.

The results obtained by this study are a good starting point for researchers as well as practitioners to explore in more the e-business success factors constructs as well as the measures of e-business success. We also expect modifications in the questionnaire for future research.

7.1 Limitations

This study provides a limited basis for the generalizations of results as only 24 organizations were considered. The small sample size restricted the scope for conducting a rigorous statistical analysis, and thus the results obtained using regression analysis have to be treated with caution.

There was a bias involved in the selection of independent variables, or precisely the success factors as they were picked from the literature and practitioners' viewpoints. The smaller time frame to complete the study was also a limitation. Some extraneous factors could have affected the respondents' views and responses, such as the downturn in the economy when the survey was conducted. Also, as mentioned earlier, a small sample size can raise questions about the validity of the e-business success model proposed in the study.

7.2 Benefits and Implications

Little has been done in the literature to understand the relationship among the various success factors for e-business. The results of the study will help in explaining the relationship among the various factors. Also, the study is the first of its kind for Canadian firms. The results of the study can help businesses to understand what factors lead to e-business success. Businesses can look back at their current strategies and accordingly invest resources in developing the success factors.

The model developed will enable firms to focus on what they do best and enable them to realize the full benefits of Internet technologies to successfully adapt to the changing business landscape. e-business should be viewed in terms of business functions, its related processes and infrastructure rather than just another information technology phenomenon.

7.3 Scope for Future Research

It was surprising to learn that Top Management Support and e-leadership did not directly influence e-business success. A more detailed study on this aspect would be an interesting proposition for future research. A more detailed study with a larger sample size is required to test the relationship among the various success factors and how that influences e-business success.

Research within the individual sectors such as banking industry or software industry could also be conducted to see if the success factors vary across industries or not. Another study with pure e-business or the dot-com firms could be conducted to see the difference in success model between the two kinds of firms. Another extension of this study could be to extensively study the measure of e-business success.

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APPENDIX I

Sample Questionnaire

e-business Success Factors Survey

1. Organization's Background Information

Type of Industry:

☐ banking/real estate/insurance	☐ computer-related (IS, MIS, DP)	☐ telecommunication
☐ computer-related (software)	☐ business supplies or services	☐ education, research
☐ entertainment/media/publishing	☐ medical/health services	☐ hospitality
☐ engineering/construction	☐ computer-related (hardware)	☐ consulting
☐ consumer retail/wholesale	☐ manufacturing/distribution	☐ government
☐ nonprofit/membership organization	☐ legal services	☐ other

Number of people employed:

- ☐ Less than 10 ☐ 10-50 ☐ 51-100 ☐ 101-500 ☐ 501-1000 ☐ More than 1000

Total sales in the year 2001(\$US):

- ☐ under 10 million ☐ 10⁺ to 25 million ☐ 25⁺ to 50 million ☐ 50⁺ to 100 million ☐ 100⁺ to 500 million ☐ Greater than 500 million

Market scope: (Please check all that apply)

- ☐ Local market ☐ National market ☐ International market

2. Organization's e-business information

Does your company buy or sell on the Internet?

☐ Yes ☐ No

Does your company connect with it's customers using Internet?

☐ Yes ☐ No

Does your company connect with it's suppliers using Internet?

☐ Yes ☐ No

Is there a separate group dedicated to promoting and deploying e-business?

☐ Yes ☐ No

How is your company using the web (Please check all that apply)

- ☐ To conduct business to business transactions with suppliers or business partners
- ☐ To sell directly to customers
- ☐ To provide information such as posting company marketing information on the web site
- ☐ As an intranet for communicating information within the firm

What priority level is assigned to your e-business initiatives?

☐ Critical ☐ High ☐ Moderate ☐ Low ☐ Not a priority

3. At what stage is your company placed currently with respect to e-business?

- ☐ Evaluating or assessing e-business needs
- ☐ Planning or developing an e-business strategy
- ☐ Implementing e-business initiatives
- ☐ Managing e-business initiatives

4. With respect to your company's e-business initiatives how important are the following factors to your organization, on a scale of 1 to 5, where 1 is extremely important and 5 is not at all important?

	Extremely Important	Somewhat Important	Neutral	Not Very Important	Not At All Important
	(1)	(2)	(3)	(4)	(5)
Customer focus	☐	☐	☐	☐	☐
Supplier relationship	☐	☐	☐	☐	☐
Technological infrastructure	☐	☐	☐	☐	☐
Web site design and content management	☐	☐	☐	☐	☐
Role of top management in communicating e-business vision	☐	☐	☐	☐	☐
Embedding a culture of innovation and learning	☐	☐	☐	☐	☐
Long term e-business strategy	☐	☐	☐	☐	☐
Security and privacy issues	☐	☐	☐	☐	☐
Customer trust	☐	☐	☐	☐	☐
Leadership	☐	☐	☐	☐	☐

5. Please rate on a scale of 1 to 5, where 1 is to a great extent and 5 is not at all.

	To a Great Extent	Very	Neutral	Not Very	Not At All
	(1)	(2)	(3)	(4)	(5)
Do you consider your e-business successful?	☐	☐	☐	☐	☐
Is your organization able to achieve the goals and mission of the e-business initiatives?	☐	☐	☐	☐	☐

☐ Yes ☐ No

If yes, which of the following best characterizes it?

☐ We keep no personal data
☐ Personal data is for internal use only
☐ Personal data is shared with carefully screened suppliers
☐ Personal data is available through a list rental program
☐ Personal data is shared freely
☐ Others (Please specify) <input type="text"/>

[illegible]

9. How satisfied are you with the organizational wide technological architecture with respect to e-business initiatives in terms of the following parameters. Please rate on a scale of 1 to 5, where 1 is completely satisfied and 5 is completely dissatisfied?

	Completely Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Completely Dissatisfied
	(1)	(2)	(3)	(4)	(5)
Backbone bandwidth	☐	☐	☐	☐	☐
Privacy	☐	☐	☐	☐	☐
Cost	☐	☐	☐	☐	☐
Performance	☐	☐	☐	☐	☐
Reliability	☐	☐	☐	☐	☐
Flexibility	☐	☐	☐	☐	☐
Customization	☐	☐	☐	☐	☐
Usability	☐	☐	☐	☐	☐
Security	☐	☐	☐	☐	☐
Integration with existing applications	☐	☐	☐	☐	☐
Streamlined Operations	☐	☐	☐	☐	☐
Upgradability	☐	☐	☐	☐	☐

10. Please rate to what extent the following statements are applicable to your organization on a scale of 1 to 5, where 1 is to a great extent and 5 is not at all.

	To a Great Extent	Very	Neutral	Not Very	Not At All
	(1)	(2)	(3)	(4)	(5)
Our web site is easy to use	☐	☐	☐	☐	☐
Our web site provides company information including the contact person	☐	☐	☐	☐	☐
Our web site provides detailed product specifications, including pictures, descriptions & technical specifications	☐	☐	☐	☐	☐
Our web site states product and service guarantee and warranty policies	☐	☐	☐	☐	☐
We provide an easy return policy of goods purchased online	☐	☐	☐	☐	☐
We use graphics and animated graphics only if they are an integral part of the products and services offered	☐	☐	☐	☐	☐
We have spent enough resources on developing the content for our web site	☐	☐	☐	☐	☐
We emphasize the importance of branding when selling goods/services online	☐	☐	☐	☐	☐

11. Please rate your level of agreement with the following statements related to your organization's e-business strategy, on a scale of 1 to 5, where 1 is agree strongly and 5 is disagree strongly.

	Agree Strongly	Agree Somewhat	Neither Agree Nor Disagree	Disagree Somewhat	Disagree Strongly	N/A or Don't Know
	(1)	(2)	(3)	(4)	(5)	
Our company has a formal e-business strategy in place	☐	☐	☐	☐	☐	☐
Top management plays an important role in designing an e-business strategy	☐	☐	☐	☐	☐	☐
It reflects our strategic thinking and vision	☐	☐	☐	☐	☐	☐
It is flexible	☐	☐	☐	☐	☐	☐
It elaborates on proper allocation of resources	☐	☐	☐	☐	☐	☐
It elaborates on marketing plans	☐	☐	☐	☐	☐	☐
It elaborates on our web site & brand	☐	☐	☐	☐	☐	☐
It elaborates on our fulfillment system	☐	☐	☐	☐	☐	☐
It elaborates on our customer service plan	☐	☐	☐	☐	☐	☐
It elaborates on our partners and suppliers	☐	☐	☐	☐	☐	☐
It elaborates on our technology choices	☐	☐	☐	☐	☐	☐
It elaborates on our staffing and management	☐	☐	☐	☐	☐	☐

12. Please answer the following questions related to security?

Is your organization using a secure transaction method: ☐ Yes ☐ No

Is your e-business protected by a firewall: ☐ Yes ☐ No

Is your organization using site certificates: ☐ Yes ☐ No

How are e-business transactions encrypted:(Please check all that apply)

☐ No encryption used

☐ Secure SocketLayer

☐ Independent public key encryption

☐ Other (Please specify) _____

13. Please rate your level of agreement with the following aspects related to your organization's suppliers/partners in e-business context on a scale of 1 to 5, where 1 is agree strongly and 5 is disagree strongly.

[illegible]

14. Please rate the impact of implementing e-business initiatives in your organization on the following parameters on a scale of 1 to 5, where 1 is to a great extent and 5 is not at all.

	To a Great Extent	Very	Neutral	Not Very	Not At All
	(1)	(2)	(3)	(4)	(5)
Improved customer service	☐	☐	☐	☐	☐
Improved supplier's relationship	☐	☐	☐	☐	☐
Improved customer satisfaction	☐	☐	☐	☐	☐
Improved business processes	☐	☐	☐	☐	☐
Improved preparedness to drive change	☐	☐	☐	☐	☐
Improved flexibility to manage change	☐	☐	☐	☐	☐
Improved economic profit	☐	☐	☐	☐	☐
Improved return on investment	☐	☐	☐	☐	☐
Improved product and service innovation	☐	☐	☐	☐	☐
Increased employee satisfaction	☐	☐	☐	☐	☐

Background Information

15. In case you would like to receive the summary results of the study, please provide the following information below:

Respondent's Position:

Name:

Email:

Phone:

Address:

Postal Code:

Province (Canada):

Country:

Thank you for taking the time to complete the survey

APPENDIX II**Sample Covering Letter**

Critical Success Factors of e-business: An Empirical Study

Dear Participant,

Subject: e-business success factors survey

E-business is the buzzword of the 21st century. All top Canadian businesses irrespective of their industry have undertaken e-businesses initiatives with varying degrees. However, the big disparity in success and failure of e-businesses over the last two years have given rise to this survey as we have recognized the need to identify the success factors of e-business for Canadian firms.

You will profit immediately from our research. You will be sent a summary of the findings of the research, which we hope will fairly generalize the views of the top Canadian e-businesses. Based on the results you may be able to identify success factors for your e-businesses and accordingly aim at investing resources in them.

It will take you approximately 15 to 20 minutes to complete the questionnaire, which consists of multiple-choice questions. As a matter of course, we guarantee that your reply will be treated in the strictest confidence and analyzed anonymously in statistical form only. Your name and address will not be associated with the findings in any way.

We would be delighted if you could take the time to fill in the questionnaire. It is a web-based survey and you are requested to submit the questionnaire online. Should you have any queries, please contact Dr. Uma Kumar (Tel. 613-520-2600 Ext. 4463) or Manjari Maheshwari of Carleton University (Tel. 613-523-8634).

We would like to thank you very much in advance for your support of our research project.

Sincerely yours,

Uma Kumar
(Professor and Graduate Supervisor)
ukumar@carleton.ca

Manjari Maheshwari
(Student Researcher)
Mmaheshw@business.carleton.ca

APPENDIX III

Summary of Factors Identified through Literature

Factors identified through literature: - A Summary

Factor 1: Customer Focus

Variable	Author (Year)
1. Focus on customers	Godenhielm (1999), Veihland (1998)
2. Customer service and customer care	Jones and Field (2000), Barua (2000), Seybold (2000), Wanninger (1998), Huff <i>et al.</i> (2000), Han & Noh (2000), Raphael (2000)
3. Customer awareness and orientation of IT applications	Barua (2000), Han & Noh (2000) Prasad et al. (2000)
4. Target the right customer	Seybold (2000)
5. Deliver personalized and customized service	Seybold (2000)
6. Add value for customers	Wanninger (1998), Raphael (2000)
7. Convenience to customer	Han and Noh (2000)

Factor 2: e-business Organizational Culture

Variable	Author (year)
1. Continuous innovation and learning	Bloch et al. (1996), Crossan and Spracklin (2001)
2. More customer centric	Kanter (2000), Shankar (2001), Crowley (1998), Madden (1998), Saltzman and Luthans (2001)
3. Tied with the e-business strategy	Shankar (2001)
4. Understanding the benefits	Stathis (2001)
5. Transforming the work place	Delargy (2001)
6. Foster collaborative work environment	Wood (2000)
7. Good communication strategy	Follit (2000)
8. Education and training	Travers (2000)
9. Virtual team	Delargy (2001), Jones and Field (2000), Townsend <i>et al.</i> , (1998)
10. Understand Internet culture	Huff, Wade (2000), Stewart (2000)

Factor 3: Top Management Support

Variable	Author (Year)
1. Management Commitment	Jones and Field (2000), Kalakota and Robinson (2000), Stewart (2000)
2. Financing and Resources	Brache (2000), Bloch et al. (1996), Stewart (2000), Venkatraman (2000), Godenhielm (1999)
3. Active role in e-business strategy	Brache (2000), Trowbridge (2000)
4. Mobilization of work force	Venkatraman (2000)

Factor 4: Supplier Orientation

Variable	Author (Year)
1. Strong relationship with partners and Suppliers	Jones and Field (2000), Barua and Whinston (2000), Crossan and Spracklin (2001), Godenhielm (1999)
2. Networking with the critical mass	Littlestone (1997)
3. Supplier readiness for electronic business	Barua and Whinston (2000)

Factor 5: Strong e-leadership

Variable	Author (Year)
1. Communication of e-business vision	Trowbridge (2000)
2. Champion	Venkatraman (2000), Follit (2000)
3. Managing the integration challenges	Walker (2000)
4. Sharing and organizational learning	Walker (2000)
5. Understanding the technology	Kalakota and Robinson (1999)
6. Leadership at the top	Veihland (1998)

Factor 6: Suitable e-business Technical Infrastructure

Variable	Author (Year)
1. Streamlined operations	Barua and Whinston (2000), Scarpa (2000), Venkatraman (2000)
2. Integration of new and legacy systems	Hsu and Pant (2000)
3. Reliability	Scarpa (2000), Venkatraman (2000), Trowbridge (2000)
4. Secured systems	Stewart (2000), Bloch <i>et al.</i>

Factor 7: Web site Design and Content Management

Variable	Author (Year)
1. Web site design	Jones and Field (2000), Powell <i>et al.</i> (1998)
2. Content management	Littlestone (1997), Venkatraman (2000), Powell <i>et al.</i> (1998), Scarpa (2000), Huff, Wade (2000)
3. Easy readability and usability	Jones and Field (2000), Savin (2000)
4. Importance of branding	Venkatraman (2000), Jones and Field (2000)

Factor 8: e-business strategy

Variable	Author (Year)
1. Focus on basics	Porter (2001)
2. Strategic thinking and vision	Godenhielm (1999), Follit (2000)
3. Role of top management	Venkatraman (2000)
4. Forming alliances and partnerships	Godenhielm (1999)
5. Proper allocation of resources	Venkatraman (2000)
6. Flexible	Huff, Wade (2000)

Factor 9: Privacy

Variable	Author (Year)
1. Privacy	Hoffman and Novak (1999), Boston Consulting Group study (1997), Keen (2000), Jacobs <i>et al.</i> (2001), Han and Noh (2000)

Factor 10: Trust

Variable	Author (Year)
1. Trust	Reichfield and Schefter (2000), Warrington <i>et al.</i> (2000), Jones (2000), Hoffman <i>et al.</i> (1999), McGarvey (2001)

Factor 11: Security

Variable	Author (Year)
1. Security	Jones and Field (2000), Liu and Arnett (2000), Shaw and Gardner (1997), Neil (1999), Han and Noh (2000)

APPENDIX IV

Mean Value of Variables Considered Important for e-business Success

Mean Value of Variables Considered Important for e-business Success

No.	Variables	Mean
1	Customer service and care	1.58
2	Practice knowledge management	2.04
3	Customization and personalization	1.7
4	Adding value to customers	1.58
5	Customer awareness of IT applications	2.04
6	Culture of innovation and learning	1.83
7	Customer centric culture	1.75
8	Culture consistent with e-business strategy	2.29
9	Employees have clear understanding of e-business benefits	2.45
10	Transforming the work place	2.62
11	Education and training for the employees	2.83
12	Communication of e-business vision to the employees	2.7
13	Sharing of knowledge and information	1.75
14	Effective use of virtual teams	2.41
15	Top management commitment	1.62
16	Top management's role in mobilizing the work force	1.7
17	Top management has realistic view of the investments	1.87
18	Top management pays an active role in implementing the e-business strategy	1.91
19	Champion	2.5
20	Champion has successfully communicated the strategy	2.87
21	Champion helps in managing integration challenges	2.79
22	Champion understands the role of technological changes	2.41
23	Backbone bandwidth	2.12
24	Privacy	1.62
25	Cost	2.33
26	Performance	2.12
27	Reliability	2.37
28	Flexibility	2.45
29	Customization	2.16
30	Usability	2.26
31	Security	1.70
32	Integration with existing applications	2.54
33	Streamlined operations	2.66
34	Upgradability	2.29
35	Web site is easy to use	1.79
36	Web site provides company information	1.7
37	We site provides detailed product information	1.87
38	Web site states product and service guarantee and warranty policies	2.62

39	Web site provides easy return policy for goods	3.21
40	Web site uses graphics only if it is integral part of the product and service	2.56
41	Enough resources have been spend in developing the content of the web site	2.39
42	Importance of branding when selling goods	1.95
43	e-business strategy in place	2.08
44	Role of top management in designing the e-business strategy	2.20
45	Strategy reflects e-business thinking and vision	2.20
46	Strategy is flexible	2.33
47	Strategy elaborates on allocation of resources	2.66
48	Strategy elaborates on marketing plans	3.00
49	Strategy elaborates on web site and brand	2.58
50	Strategy elaborates on the fulfillment system	2.82
51	Strategy elaborates on the customer service plan	4.12
52	Strategy elaborates on partners and suppliers	3.08
53	Strategy elaborates on technology choices	2.87
54	Strategy elaborates on staffing and management	2.95
55	Suppliers play an important role in dealing with the changing environment	2.58
56	Suppliers make available skills and resources	2.62
57	Suppliers help in expanding the network	2.79
58	Suppliers help in rapidly reaching scale	3.00
59	Suppliers help in reducing costs	2.95
60	Most of the suppliers are doing e-business	2.86
61	Supplier's systems are integrated	3.52
62	Easy conflict resolution with suppliers	3.54
63	Increased sharing of information and learning with suppliers	3.20
64	Customer trust	1.1

APPENDIX V

Correlation Results

Correlation Results of e-business Success and the Independent Variables

Correlations

	SUCCESS	CUSTFOCU	ECULTU	TOPMGU	ELEADERU	TECHINFU	WEBSITEU	STRATEGU	SUPPLIEU
SUCCESS	1.000	.565**	.535**	.178	.009	.662**	.432*	.570**	.511*
CUSTFOCU	.565**	1.000	.809**	.378	.258	.636**	.687**	.607**	.544**
ECULTU	.535**	.809**	1.000	.489*	.471*	.511*	.721**	.791**	.524**
TOPMGU	.178	.378	.489*	1.000	.821**	.366	.250	.387	.147
ELEADERU	.009	.258	.471*	.821**	1.000	.257	.108	.268	.100
TECHINFU	.662**	.636**	.511*	.366	.257	1.000	.444*	.413*	.372
WEBSITEU	.432*	.687**	.721**	.250	.108	.444*	1.000	.595**	.470*
STRATEGU	.570**	.607**	.791**	.387	.268	.413*	.595**	1.000	.520**
SUPPLIEU	.511*	.544**	.524**	.147	.100	.372	.470*	.520**	1.000

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Correlation Results

Correlations

	SUCCESS	TECHINFU	STRATEGU	IMPSUPP Improved supplier relationship	IMPCUSTS Improved customer satisfaction	IMPCHANG Improved preparedness to drive change	IMPEMPST Improved employee satisfaction
SUCCESS	1.000	.662**	.570**	.562**	.559**	.791**	.803**
TECHINFU	.662**	1.000	.413*	.251	.204	.571**	.630**
STRATEGU	.570**	.413*	1.000	.528**	.516**	.502*	.431*
IMPSUPP	.562**	.251	.528**	1.000	.355	.505*	.434*
IMPCUSTS	.559**	.204	.516**	.355	1.000	.466*	.435*
IMPCHANG	.791**	.571**	.502*	.505*	.466*	1.000	.652**
IMPEMPST	.803**	.630**	.431*	.434*	.435*	.652**	1.000

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

APPENDIX VI

Regression Table (Model Summary)

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	TECHINFU	.	Stepwise (Criteria: Probability-of-F-to-enter $\leq .050$, Probability-of-F-to-remove $\geq .100$).
2	STRATEGU	.	Stepwise (Criteria: Probability-of-F-to-enter $\leq .050$, Probability-of-F-to-remove $\geq .100$).

a. Dependent Variable: SUCCESS

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.662 ^a	.439	.413	.6431
2	.738 ^b	.545	.502	.5927

a. Predictors: (Constant), TECHINFU

b. Predictors: (Constant), TECHINFU, STRATEGU

ANOVA^c

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.110	1	7.110	17.192	.000 ^a
	Residual	9.098	22	.414		
	Total	16.208	23			
2	Regression	8.832	2	4.416	12.573	.000 ^b
	Residual	7.376	21	.351		
	Total	16.208	23			

a. Predictors: (Constant), TECHINFU

b. Predictors: (Constant), TECHINFU, STRATEGU

c. Dependent Variable: SUCCESS

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.600	.408		1.472	.155
	TECHINFU	.671	.162	.662	4.146	.000
2	(Constant)	.283	.402		.704	.489
	TECHINFU	.522	.164	.515	3.185	.004
	STRATEGU	.265	.120	.358	2.214	.038

a. Dependent Variable: SUCCESS