A Business Case Framework for Small Firms Transitioning to E-Business

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by

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1.0 Objective

E-business refers to the transformation of business processes and business relationships using web-based technologies. It includes e-commerce (online transactions), e-collaboration (among staff, customers, and partners/suppliers), and the development of e-communities (Finneran, 2000). Its main characteristic is using web-based technologies to become truly customer focused (Bock & Marshak, 2000). Of necessity, this means that at least part of a business' operations move online to take advantage of the many-to-many communications features of the Web.

The transition to e-business is a complex one. It requires not only financial resources for technological changes but also staff time to develop new concepts and organizational structures, to become trained in the new business model and supporting technologies, and to support its execution. Creating or developing an online portion of a business operation can be like opening another office -- in cyberspace.

This paper provides a framework for assessing the business case for small firms regarding the transition from traditional business practices to e-business. It provides a starting point for policy analysts and for small business owners in answering questions like under what conditions should small businesses be repositioning as e-businesses? If a business is already successful, why invest precious resources in making that transition? What are the implications for small businesses if they continue with "business as usual"?

2.0 Context

Forrester Research has predicted that 92 percent of large companies will have some e-commerce capability by 2002, with e-commerce sales of US$327 billion in the U.S. alone (Carmichael, 1999a). IDC has predicted that global e-market transactions will reach US$1.2 trillion by 2004 (IDC, 2001). Analysts like Forrester Research have also indicated that operating expenses for most new e-businesses are still averaging 170 percent of online revenues, and that ROI (return on investment) considerations are not relevant until at least the third year (*www.forrester.com*). For a small owner-operator, these figures do not sound attractive. AMI-Partners found in a survey that 57 percent of small firms felt that their products or services were not readily sold online, and 27 percent reported that they did not have the necessary in-house technical support for e-business (2000). So why not just continue

with business as usual?

What is often left unsaid is that the primary arguments for considering e-business are not ROI but rather the ability to advance a firm's strategic objectives and become/remain a category leader (Bernstein, 2000; Carmichael, 1999a; Wilder, 1999). ActivMedia has found that the majority of executives who have made the e-business transition did so as a matter of survival in order to protect market share (ActivMedia, 2000). Internet Week reports that 44 percent of companies surveyed moved online in response to a competitive threat (Lewis, 2000a). Increasingly, Canadian consumers are shopping online at US e-business sites, and US B2B companies are encroaching on traditional Canadian market segments.

From a more proactive perspective, CyberDialogue reports that 60 percent of businesses going online reported increased revenues, half of which was from new customers, and that 71 percent of executives reported that an online component was essential to their commercial success (*www.cyberdialogue.com*). A study commissioned by Dell Computers has shown that the real e-business success story has been for small businesses who have seen an increase in revenues per employee of 47 percent since starting e-business, compared with a 13 percent increase for large firms (Wagner, 2000). According to PricewaterhouseCoopers, over 75 percent of executives measure their online success in terms of their ability to increase customer loyalty and retention (1999). When one considers that online businesses are experiencing a "churn" (customer defection) rate of 55.3 percent and that companies do not begin to profit from an individual customer until their second year of purchasing, customer loyalty is the key to profitability (Mowrey, 2000).

3.0 Methodology

Because of the rapidly changing technological environment, most of the desk research for this paper has been conducted online and has focused on studies, news articles, best practice summaries, and online offerings in the period of mid-1999 to January 2001. Some of the data cited are only available through proprietary reports that need to be purchased or through time-limited press releases. In these instances, the company's website has been used as the citation.

In addition, the following interviews and discussion groups have been held:

a) Information and communication technology subject matter experts including application service providers (ASPs), Internet service providers (ISPs), software programmers, and Strategis technical staff.

b) 18 Canadian small businesses in the following industries – manufacturing, architectural services, consulting, events management, insurance brokerage, legal services, physiotherapy, temporary personnel, tour operators, training, and artisans.

c) 22 small businesses from developing countries who participated in the Executive Forum on e-commerce/e-trade sponsored by the International Trade Centre UNCTAD/WTO in September 2000 in Switzerland.

d) Discussions with approximately 40 small business owners on e-commerce/e-business issues for SMEs in the European Union in conjunction with a GATS 2000 conference held in Brussels in December 2000.

e) Discussions with approximately 60 women small business owners from around the world on issues relating to e-business transition in the context of being a keynote speaker on e-business at an OECD conference on women entrepreneurs in Paris in December 2000.

The various costs cited in this paper were obtained by requesting quotes from a range of firms for providing the stated service for a firm of four persons (with additional quotes as needed for firms of 10 and 15 employees). Where possible, the benchmark statistics cited are limited to data for small firms.

4.0 Estimating the Connectedness of Small Firms

Opinions vary considerably regarding the current "connectedness" of small businesses. At one end of the continuum, KPMG's *The New Frontier: Enterprises and E-Business in Western Canada* study for Western Diversification cites a figure of 96 percent of SMEs as using e-mail and having access to the Internet in 1999 (KPMG, 2000). At the other end of the continuum, IDC's report estimated 35 percent of small businesses as being "connected" in 1999, with 11 percent having websites (IDC, 2000). CFIB's *Virtually a Reality* reports that Internet usage among small firms was over 50 percent in 1999 (Mallett, 1999b). Industry Canada's own survey of micro-enterprises in business for at least four years indicates 65 percent of firms with computers and 39 percent using e-mail. There are several factors that need to be considered in evaluating current figures for connectedness.

Length of time in business. While adoption of other technologies may increase as firms grow and expand, new business start-ups are likely to begin business with e-mail and Internet connection, resulting in higher adoption rate among newer firms. A study of Canadian women service exporters found that, in 1999, 42 percent of women-owned start-ups began exporting immediately, relying on the Internet (Riddle, 2000b).

Timing of data collection. Analysts like the Kelsey Group have estimated a 150 percent increase in Internet use by small firms from 1999 to 2000 (2000). IDC reports that the Canadian e-business sector will grow at around 75.5 percent a year through 2004 (IDC, 2000). CFIB had already reported that 1999 figures were almost double those of 1997 (Mallett, 1999b). CFIB's mid-2000 update reports an almost 60 percent connectedness among micro-enterprises, 71 percent connectedness in small firms with 5 to 19 employees, and 80 percent in SMEs with over 20 employees (Mallett, 2000). See Table 1 for estimates based on these data.

Coverage of small businesses in Canada. There are also questions to be raised about the assumed population base. For example, CFIB states on its website that "78 percent of Canada's one million businesses have less than five employees" (Mallett, 1999a). In fact,

Statistics Canada's Business Register lists over two million businesses.

Table 1: Estimates of the Percent of Small Firms Connected in 2001

Source	Published data		Projection for 2001 at growth rate of:		
	1999	mid-2000	50 %	75%	150%
CFIB					
small	50%	71%	100%	100%	100%
micro-enterprises	na	59%	88%	100%	100%
IDC	35%	na	79%	100%	100%

Sources: Mallett (1999b, 2000); IDC (2000).

Another source of potential distortion is the issue of home-based businesses and the self-employed. The IDC small business study does not include home-based businesses. However, an analysis of the Statistics Canada Business Register indicates that 82.3 percent of firms have no employees (see Table 2).

Table 2: Percent of Canadian Firms by Type of Business Structure

Type of Business Structure	Percent
With no employees:	
Self-employed	50.7%
Unincorporated	26.1%
Incorporated	5.5%
With employees:	
Unincorporated	6.2%
Incorporated	11.5%
Total firms	100.0%

Source: Analysis of the Statistics Canada Business Register.

Data from the Business Register would suggest that home-based businesses could potentially be a substantial omission. As well, the Direct Sellers Association of Canada (*www.dsa.ca*) reports that, as of 1998, there were 1.3 million direct sales persons, at least 87 percent of whom have their own businesses as multi-level marketers. Most direct sales contractors operate as single-person home-based businesses with computerized links to their major supplier (usually created and maintained by the supplier). It is quite possible that these businesses are not represented in either the CFIB or the IDC surveys, and may not even be

captured in Statistics Canada's Business Register.

Sectoral distribution of small businesses. The Business Register shows that, of the listings that are not governmental agencies or membership organizations, service firms comprise 86 percent of the firms. The personal services portion of the service sector that is least likely to be connected comprises two percent of total Canadian firms. In retail services where IT adoption has been slow among smaller operators, many very small establishments now have at least EDI connections for debit and credit card withdrawals and an increasing number have automated links with major suppliers.

Experience and previous research indicates that the other portions of the service sector have virtually universal adoption of at least e-mail and Internet access. In the recent CFIB *E-Business Update*, 90 percent of business service firms are using the Internet, with 52 percent considered e-businesses already (Mallett, 2000). The lowest Internet usage rate reported is for retail establishments, at just under 60 percent.

Resolving this issue of percent of small firms that are already connected is not easy. But then the precise statistic may not be critical, especially as mere connectedness is not the answer to increased competitiveness. Suffice it to say, virtually all small businesses are still in need of a strategy, with accompanying justification, to transition from their current business model to an e-business model.

5.0 The Changing Environment for Small Firms

Interviews and group discussions indicated that there is an increasing shift in the small business community from *whether* to migrate to an e-business model to *how* in the world one could afford to do so. This suggests that analyses of the business case will need to focus on alternatives for *how* to make the shift, rather than on a simple cost/benefit framework to determine if a shift is appropriate.

A related issue that emerged is that the underlying reason for lack of e-business adoption does not appear any longer to be "lack of awareness of the benefits and costs." Instead, business owners report a combination of misunderstandings about what is involved in e-business and an understandable puzzlement about how to address the apparent costs of transition with very limited resources.

It became clear from the primary research that the key mediating variable in assessing transition options is the firm's pre-tax net revenues (i.e., the funds available), not the number of employees. Because of the increase in outsourcing options, micro-enterprises are now able to supplement core staff by contracting out for e-rep services, etc.

Finally, recent polls indicate that small firms are dramatically increasing online purchases while exercising caution in regard to sales online. In 1999, small businesses accounted for 93 percent of online business-to-business spending and were able to take advantage of bulk purchase discounts (through buying pools) of at least 20 percent (Greenwade, 2001). The availability of online banking services for small firms is also creating savings in staff time and

processing fees (Harper, 2000).

6.0 The Five Core Technologies and Their Costs

The supporting web-based infrastructure has now matured to the point that a strong case can be made that small firms are better off, both competitively and cost-wise, "leapfrogging" to a basic e-business structure rather than proceeding in an incremental fashion. The application service provider (ASP) options, for example, have changed substantially (see Appendix A). In making a transition, there are five technologies to consider (see Table 3 for links between technology and function):

a) *E-mail/Internet access*

Being able to communicate with customers and partners/suppliers by e-mail has become an accepted practice. Costs for e-mail accounts range from free (e.g., Juno.com or Hotmail.com) to $40 per month for enhanced services like CompuServe.

b) *Websites*

It is now possible to get websites designed and hosted free if a firm is willing to carry banner advertising on the site (see sites like *www.freewebsites.com* or *www.makemoneynow.com* for more information). Design charges for a website will probably average $3,000 to $5,000 (without e-commerce capabilities) and hosting charges may vary from $50/month to $150/month. This is a case where firms get what they pay for. Only with the more expensive hosting services are they likely to get the 99.9999% reliability that is desirable.

c) *Intranets*

One of the important aspects of e-business is internal coordination among staff, which is what an intranet provides using web-based technologies. As well, successful e-business firms are ones where the staff have become very comfortable with the technology, in part through using it internally for administrative purposes. Costs of an intranet run from free (e.g., *www.intranet.com*) to $5,000 for design/set-up plus $40/month for hosting and maintenance.

d) *E-commerce capability*

To create and host an interactive transactions site is likely to cost between $80,000 and $825,000. Forbes cites average costs of $2.25 million for large firms (*www.forbes.com*). Fortunately, a small firm can use off-the-shelf applications for less than $5,000 per year (Carmichael, 1999b) or can gain e-commerce functions free through participation in online shopping malls or industry-specific e-marketplaces, or from a site like *www.freemerchant.com*.

e) *Extranet*s

An extranet is a secure private network that uses web-based technologies and

the public telecommunications system to share part of one's business operations with customers and partners/suppliers. It is like a limited public extension of an intranet, but with a firewall between the extranet area and the business' actual operations (Yoskovitz, 1998). Gartner Group predicts that 40 percent of e-commerce functions will migrate to extranets by 2002 (*www.gartnerweb.com*). A basic extranet for a small firm typically costs $5,000 to design and set-up and then $80/month for hosting and maintenance. Fortunately for many small firms, their major suppliers may well have invested already in extranet development in which they can then participate.

Table 3: Linking Technology to Function

Function	Appropriate Technology				
	ISP/ASP*	**Website****	**Intranet**	**E-commerce capability#**	**Extranet**
E-mail	**U**				
Web presence	**U**	**U**			
Internal coordination			**U**		
Online order taking				**U**	**U**
Online order fulfilment				**U**	**U**
Online interaction with customers					**U**
Online collaboration with partners & suppliers					**U**

*Usually e-mail and website hosting are provided through an Internet Service Provider (ISP). Recently, however, application service providers (ASPs) are offering that service in addition to managing all IT-related matters.

**Websites can be designed and hosted by the firm itself, hosted by an ISP, or designed and hosted by an e-marketplace.

#As these functions migrate either to extranets or e-marketplaces, the need to invest in specific e-commerce applications declines.

7.0 What Are the Potential Benefits of an E-Business Transition?

Firms report a number of benefits, ranging from cost reductions to increases in market share (Fraser et al, 2000). Over 90 percent of firms surveyed focus on improvements in customer relations (PricewaterhouseCoopers, 2000), with 58 percent giving an increase in customer satisfaction as a very important measure of success (Fridman, 2000). Indicators of customer satisfaction include increases in repeat purchase and referrals (Dodson, 2000c), decreases in customer complaints (Dodson, 2000b), and decreases in customer defections (Dodson, 2000a).

One of the earliest gains that companies report in going online is a decrease in operational costs (Bernstein, 2000). AMI-Partners report that 27 percent of an average company's expense structure is for core business services that can be sourced online, with a further seven percent in MRO (maintenance, repair, operations) that can be renegotiated with current suppliers due to online bids (2000). IBM reported a customer support savings of US$750 million in 1999 due to shifting the bulk of enquiries to self-service on their website (Casselman, 2000).

Other potential benefits from an e-business transition are listed in Table 4 below, linked to the firm's overall strategic objectives. Methods for calculating types of benefit are listed in Appendices B and C.

One final benefit is the ability to earn specific revenues if a firm participates in an affiliate program (see, for example, *www.affiliate.com*). In these programs, the firm's website displays banner ads for other companies and the firm is paid if a visitor either views the ad (an "impression") or clicks through to the other site. Revenues average $1,000 per month.

Table 4: Linking Potential Gains to Strategic Objectives

Strategic Objective	Potential Gain
Improve customer satisfaction	Increase in repeat purchase Increase in number of referrals Decrease in number of complaints Decrease in seriousness of complaints
Decrease operational expenses	Decrease in specific expenses Decrease in cost of sales Decrease in transaction costs
Increase new customer reach	Increase in number of new customers Increase in geographic markets of customers
Lower promotional costs	Decrease in promotional costs
Increase direct access to customers	Increase in customer design input Increase in number of online customer interactions

Strategic Objective	Potential Gain
Retain skilled staff	Decrease in staff departures Decrease in training needed for new staff Increase in staff job satisfaction Decreased staff time on repetitive tasks
Decrease input/supply chain costs	Decreased intermediation costs Decrease in specific expenses Decrease in transaction costs
Increase hyper-partnering efficiency	Increased integration with partners/suppliers Decrease in supply chain cycle time

8.0 What Are the Potential Costs of an E-Business Transition?

Larger companies have estimated that initial site development costs are typically 0.7 percent of annual revenues, with costs averaging from $500,000 to over $1 million. Obviously, such developmental costs are not justified for small businesses. However, such high costs are also not needed if small businesses outsource site development and hosting to application service providers (ASPs). An added advantage of using an ASP is that, because the software and data files are housed offsite on the ASP's Server, the firm no longer needs to upgrade software and hardware or maintain internal IT staff.

Initial investment and ongoing operational costs will depend on where the firm is starting from. Depending on its current situation, a firm may or may not have additional costs to consider during the business case analysis:

- *Not online at all, not even e-mail*
  The firm will have some additional staff training costs as staff have not been used to using any of these technologies in their work.

- *Using e-mail but not the Internet*
  The firm will have some additional staff training costs in how to use the Internet.

- *Static "brochureware" website*
  The firm will need to migrate its static website to an interactive website, which would probably cost between $11,000 and $58,000 (Carmichael, 1999c). For budgeting purposes, the firm should assume that it does not yet have a website.

- *Intranet as well as a website*

This is an excellent position to be in because it means that staff are getting daily experience with the technology and can coordinate their activities. Now the firm will need to link to customers and partners/suppliers using an extranet. Firms may find that some training is needed to get staff used to sharing information outside the company and also on ethical guidelines for doing so.

- *Interactive website, but without any e-commerce functionality*
  If e-commerce functionality on a firm's website is needed, the firm will have some staff training costs to orient staff. But, although there is a lot of talk about e-commerce sites and capabilities (e.g., shopping carts, online catalogues), transactional needs are being increasingly met through ASPs, e-marketplaces, or extranets. Firms can also meet these needs free of charge on sites like *www.freemerchant.com*.

- *Interactive website, with e-commerce functionality but no extranet*
  The firm will need staff training on extranet functions once they are developed.

- *Extranet as well as an interactive website*
  The firm has already undertaken an e-business transition and should be in a good position to move forward.

Several new developments offer cost-efficient approaches – e.g., ASPs, free websites and e-marketplace services, free intranets, and affiliate programs. Table 5 outlines the cost structures for three possible strategies (ranging from $7,500 to $50,000) that make use of a summer co-op student and a range of free services or services available through ASPs. All cost quotations are based on a firm size of four employees.

Minimum investment. This option makes use of the maximum range of free services, resulting in a minimal ability to customize what is happening online. A co-op student, under supervision, would do all of the registration and online monitoring necessary. Start-up costs of $7,500 would be entirely personnel related. Note, however, that because an ASP is not being used, there remains an ongoing annual cost of $9,000 in IT-related expenses.

Modest investment. This option makes use of an ASP for office IT infrastructure functions, plus some free services. It assumes that, to complement the ASP services, an extranet will be created and would require an initial investment of $12,000. Ongoing annual operational expenses would be $23,000, primarily for the ASP.

Moderate investment. This option makes use of ASPs both for office IT infrastructure and for e-commerce functions. It assumes that both an extranet and an interactive website will be created and that enhanced online services will be used. Initial investment would be $35,000, with ongoing annual operational expenses of $55,000.

Table 5a: Start-Up Costs at Three Levels of Investment

Function	Level of Investment		
	Minimum	**Modest**	**Moderate**
E-mail	free	ASP	ASP
Web access	free	ASP	ASP
Web listings	free listings	free listings	free listings + paid registrations
Website	free website design & hosting	ASP	own design; hosted
Staff coordination	free intranet	free intranet	free intranet + enhanced services
E-procurement	monitor	monitor	monitor
E-bidding	monitor	monitor	monitor
Order taking#	free (via existing mall)	ASP (basic)	ASP (enhanced)
Order fulfilment#	contract out	contract out	contract out
Link with customer	available only through partners' networks	create an extranet	create an extranet
Link with suppliers & partners	available only through suppliers' networks	create an extranet	create an extranet
IT maintenance & upgrading	in-house + contract personnel	ASP	ASP
Communications link upgrading	56.6K modem	DSL connection	DSL connection
24x7 support	not available	ASP	ASP + extended staff hours*

Function	Level of Investment		
	Minimum	**Modest**	**Moderate**
Initial investment costs:			
Co-op student	$6,000	$6,000	$6,000
Staff to supervise ASP & co-op student	$1,000	$1,000	$1,000
Website design & set-up	–	–	$18,000
Intranet set-up	–	–	–
ASP set-up	–	$100	$100
Extranet design & set-up	–	$4,000	$5,000
High-speed connection	–	$200	$200
Staff training**	$500	$700	$1,700
Consultants	–	–	$3,000
Total investment costs	**$7,500**	**$12,000**	**$35,000**

*Providing coverage through extended staff hours assumes that there are enough employees to work staggered shift.

**Can be delivered inexpensively online through companies like SocratEase.

#Apply only for firms that distribute goods or firms that provide commodity-like services for which price lists can be posted.

Table 5b: Ongoing Operational Costs at Three Levels of Investment

Function	Level of Investment		
	Minimum	**Modest**	**Moderate**
Mandatory annual costs:			
IT staff & consultants*	$5,500	–	–
IT hardware & software*	$3,000	–	–
Supervisory staff	–	$1,000	$1,000
Website hosting	–	–	$1,200
Intranet hosting**	–	–	$400
ASP	–	$18,000	$48,000
Extranet hosting	–	$1,200	$1,200
E-commerce apps	–	–	$600
High speed connection	–	$2,400	$2,400
Staff training	$500	$400	$200
Optional:			
Co-op student (4 mos/year)	$6,000	$6,000	$6,000

Function	Level of Investment		
	Minimum	Modest	Moderate
Total annual operating costs:			
Mandatory	**$9,000**	**$23,000**	**$55,000**
Mandatory + optional	**$15,000**	**$29,000**	**$61,000**

*Note that these are not new costs but are continuing costs due to not using an ASP.
**Priced for four employees; add $90/year for each additional employee.

Initially, a co-op student would be responsible for identifying all possibilities for free online registrations, free online services, e-procurement, e-bidding, and participation in networks already created by associations, partners, or suppliers. Once those possibilities were screened by management, the co-op student would then implement all appropriate registrations and create a listing of all sites to be monitored. Depending on the range of sites and topics to be monitored, the use of a co-op student could be one-time for start-up or could be ongoing each year for four months of the year (see the option in Table 5b).

As with any new initiative, an online operation is unlikely to be a breakeven proposition for at least the first six months, and more likely the first 18-24 months. This means that executives need to plan to finance a 24-month time frame. Financing will need to come from retained earnings, loans, or equity capital. Because of the structure of most small businesses as owner-operated and unlikely to attract venture capital, this framework assumes that financing will be from retained earnings and must not exceed two years' pre-tax profit margin. Table 6 outlines those values for representative small businesses.

Table 6: Examples of Pre-Tax Retained Earnings

Annual Pre-Tax Revenue	Annual Pre-Tax Net Profit Margin		
	5%	10%	15%
$250,000	$12,500	$25,000	$37,500
$500,000	$25,000	$50,000	$75,000
$750,000	$37,500	$75,000	$112,500
$1,000,000	$50,000	$100,000	$150,000

9.0 Business Case Framework Development

Any business case will need to be developed around five questions, as outlined below. The benchmarking data cited are for small firms, defined as under 50 employees.

#1: *Is there a need to be online at all?*

There are some small companies for whom the online environment is not particularly relevant. These companies are local in nature, have personal relationships with their customers, and have very few needs for supply purchases. Most such companies would fall in the category of personal services (e.g., yard work, child care). However, any local company that has a need for supplies and equipment will want to consider the potential cost savings of online purchasing through pooled purchase arrangements.

#2: *What is the firm's strategic objective in relation to its starting point?*

Any shift towards an e-business model needs to be part of a firm's overall strategic objectives (Evans, 2000). ActivMedia has found that only 32 percent of B2B companies with an online presence actually sell products or services directly from the site (2001). The vast majority use the site to enhance credibility with potential customers or increase satisfaction among existing customers. For example, 77 percent use the site to stimulate offline contacts, and 60 percent use the site to generate leads. Possible objectives that a small firm might have include:

- Improve customer satisfaction, loyalty, and retention
- Decrease operational expenses
- Increase new customer reach
- Lower promotional costs to reach new markets
- Increase direct access to customers
- Retain skilled staff
- Provide online ordering
- Decrease input/supply chain costs
- Increase hyper-partnering efficiency

Clarity about the firm's strategy objective will help the firm select the appropriate technology for transitioning to e-business. For example, if a firm is concerned about increasing customer satisfaction, then the firm would want to investigate extranets; whereas if the firm is concerned only about decreased operating expenses, then simple web access for e-procurement may be enough. Table 7 provides a framework for deciding where technology investment is needed.

Table 7: Matching Strategic Objectives to Technology Needs

Strategic Objective	Technology Needed				
	E-mail Internet	**Interactive website**	**Intranet**	**E-commerce tools**	**Extranet**
Improve customer satisfaction	**U**	**U**	**U**		**U**
Decrease operational expenses	**U**				
Increase new customer reach	**U**	**U**			
Lower promotional costs	**U**	**U**			
Increase access to customers	**U**	**U**			
Retain skilled staff	**U**	**U**	**U**		
Provide online ordering	**U**	**U**		**U**	
Decrease supply chain costs	**U**			**U**	**U**
Increase partnering efficiency	**U**		**U**		**U**
Need this technology?	yes no	yes no	yes no	yes no	yes no
Already have this technology?	yes no	yes no	yes no	yes no	yes no
Tick each technology that <u>is</u> needed but is <u>not</u> already in place					

#3: *What are the potential benefits or gains from transitioning to e-business?*

Appendices B and C provide listings of potential benefits that can be tracked; however, only a few of these are directly relevant to an initial cost-benefit analysis. For the purposes of a business case, there are five main types of benefits to estimate, which are summarized in Table 8:

a) Increased revenues

If the firm has no basis for estimation from its own industry, then it can use the general figure of 47 percent annual increase in revenue-per-employee.

b) Customer retention

If the firm has no customer equity data (i.e., what a customer is worth to the firm in terms of purchases and referrals), then it can estimate customer equity by dividing revenues by the approximate number of

customers to get a per-customer average revenue. That figure would then be multiplied by the number of customers that might otherwise leave. Research by Deloitte and CyberDialogue have found that 34 percent of patients would switch doctors in order to have access to e-mail correspondence with the doctor's office – a figure that could be used as a reasonable estimate in the absence of industry- or firm-specific research (Deloitte Research, 2000).

Table 8: Year 1 Potential Gains from E-Business Transition

Factor	Estimation Method	Reference Table or Appendix	Estimate
Increased revenues	47% increase in revenues per employee	na	
Customer retention	Average annual revenues per customer x 34% of customers	na	
Reduced operational expenses	"Total reduced operating costs"	Table 9	
Staff retention	"Total staff replacement cost x number of staff who might leave"	Table 10	
Affiliate program income*	$1,500 per month	na	$18,000
Other anticipated benefits		Appendices B & C	
Total Potential Gains for Year 1			

*Assuming that the firm would like to participate in an affiliate program.

c) Reduced operational expenses

The firm will need to estimate savings in specific expenses that should be reduced by the transition to e-business. Table 9 provides a calculation sheet for operational cost reductions, with estimates of probable reduction levels. If the firm elects to use an ASP, then there will also be a savings in staff time needed to deal with IT matters (see Table 10 for the calculation). In addition, there is the matter of outsourcing support functions online, which should yield at least a 40 percent cost savings (Riddle, 2000a).

Table 9: Potential Cost Reductions

Expense Item	Annual Amount (for year-end financials) [A]	Percent Reduction Expected [B]	Estimated Cost Reduction (A x B)
Long distance calls		50%	
Paper supplies		50%	
Mailings		80%	
Courier		50%	
Inventory holdings*		30%	
Supplies**		20%	
Commissions paid		40%	
IT equipment & software (upgrades)#		100%	
IT equipment repair & maintenance#		100%	
Estimated Cost Reduction			
If electing to use an ASP, enter staff cost savings from Table 9a (line D)			
If electing to outsource, enter amount of estimated savings (Total E-Business Related Expenses x 27% x 40%)			
Total Reduced Operational Expenses			

*Savings due to just-in-time inventory options.
**Savings due to bulk purchase discounts.
#Include only if contracting with an ASP to supply and maintain all IT equipment & software.

Table 9a: Staff Costs for Which an ASP Could Substitute

Staff Costs	Method of Calculation	Amount
A. Average number of staff hours per month on IT-related matters	Estimate by asking staff	
B. Average monthly full-time equivalent (FTE) dealing with IT matters	Divide A by 160*	
C. Average monthly salary for staff dealing with IT-related matters	If more than 1 staff member is involved, take the average of their monthly salaries.	
D. Average monthly staff cost of dealing with IT-related matters	Multiple C by B	

*Assumes that, subtracting statutory holidays and vacation, staff work 240 days a year, or on average 20 days a month (240 divided by 12). Multiple 20 by 8 hours in a day to get 160 hours of staff time per month for a full-time staff member. If staff take more than 20 days off for statutory holidays and vacation leave, then decrease "240" as needed. If staff work a 7.5 rather than a 8 hour day, then use "7.5" instead of "8" in the multiplication.

d) Staff retention

Table 10 provides a worksheet to calculate the cost of replacing a staff person who leaves because the firm does not transition to e-business.

Table 10: The Cost of Staff Replacement

Item	No. of Hours	Hourly Rate	Cost
Cost of advertising a staff vacancy			
Temporary staff replacement			
Staff time needed for interviews			
Staff time needed for orientation of new person			
Total Staff Replacement Cost			
Total Staff Replacement Cost x Number of Staff Who Might Leave			

e) Affiliate program revenues

If the firm wishes to participate in a revenue-generating affiliate program, then the annual revenues need to be estimated. The figure of $18,000 per year ($1,500 per month) can be used as an estimate if no specific data are available.

#4: *What are the potential costs or losses from not transitioning to e-business?*

With the exception of increased revenues, the losses from saying "no" to e-business are the same as those calculated as gains in the previous section. See Table 11 for a summary.

Table 11: Year 1 Potential Losses from Not Transitioning to E-Business

Item	Estimation Method	Reference Table or Appendix	Estimate
Customer equity loss	Average annual revenues per customer x 34% of customers		
Continuing operational expenses	"Total reduced operational costs"	Table 9	
Staff replacement costs	"Total staff replacement costs x number of staff who might leave"	Table 10	
Lost increased revenues	Line 1	Table 8	
Lost affiliate income	$1,500 per month	na	$18,000
Total Potential Losses for Year 1			

#5: *How does saying "yes" compare with saying "no"?*

Before comparing Total Gains with Total Losses, one must also factor in the initial start-up costs as well as the incremental increase in operational costs (see Table 12). Appendix D provides a listing of initial start-up costs that will need to be calculated if the firm does not choose to adopt one of the three strategies outlined in Table 5. Appendix E provide a listing of operational costs that will need to be calculated on an annual basis.

Table 12: Net Potential Gains in Year 1

Item	Reference Table or Appendix	Estimate
Total Gains	Table 8	
- initial investment	Table 5a, or Appendix D	
- increased operating costs	Table 5b, or Appendix E	
- staffing training needed (optional)	Table 13, line D	
Projected Total Net Gains		

Table 13: Cost of Additional Staff Training Needed*

Technologies	Training Needed?	Number of training hours needed?
E-mail	yes no	
Internet access	yes no	
Intranet	yes no	
E-commerce capability	yes no	
Extranet	yes no	
A. Total number of staff training hours needed		
B. Total opportunity cost of having staff in training (A x average revenue per staff per hour)		
C. Estimated staff training expense (A x cost of trainer/hour)		
D Total Training Costs (B + C)		

*Embedded in the ongoing operational costs (see Table 5b) is an estimate for training related to understanding the contracted technologies. If staff need to be competent in any of the technologies listed above, then additional staff training costs need to be added.

One caveat: Remember that transitioning to e-business is not just a monetary issue. To

succeed, firms will need to undergo a cultural and organizational shift. Senior management will need to be in full support. Incentives for staff will need to change in order to support the collaborative principles of e-business and encourage the necessary shifts in thinking and behaviour. Staff training will be needed, and the whole organization will need to adapt to an environment where information is shared with customers and partners/suppliers. Otherwise, firms might as well save their money.

10.0 Illustration of Making the Business Case

To illustrate how one would make a business case for transitioning to e-business and to demonstrate that it is indeed financially feasible for small firms to do so, Tables 14 and 15 present three hypothetical firms:

a) Firm A has 4 employees and $250,000 in annual revenues, or $62,500 per employee.

b) Firm B has 10 employees and $750,000 in annual revenues, or $75,000 per employee.

c) Firm C has 15 employees and $1,000,000 in pre-tax revenues, or $66,667 per employee.

To be conservative, the annual per-tax net profit margin has been assumed to be 5 percent and the increase in revenues as been assumed to be 20 percent rather than 47 percent. No affiliate program revenues have been projected, and IT savings from the use of an ASP have not been included.

In Table 14, it is clear that all three firms would profit from the "modest" level of investment illustrated in Tables 5a and 5b. This scenario would continue to be profitable for the smallest firm even if the increase in revenues were lowered to 15 percent. For Firm B, the scenario would continue to be profitable at a 10 percent revenue increase; and for Firm C at a 5 percent revenue increase.

Table 14: Illustration of Business Case for E-Business Transition - Modest Investment

Factor	Firm A	Firm B	Firm C
Gains:			
Increased revenues	50,000	150,000	200,000
Customer retention	17,000	34,000	51,000
Reduced operational expenses	1,200	1,500	1,800
Staff retention	3,000	6,000	9,000
Total Gains	71,200	191,500	261,800
Less:			
- initial investment	12,000	12,000	12,000
- increased operational costs	29,000	29,000	29,000
- additional staff training	1,500	3,000	4,500
Total Net Gains	**28,700**	**147,500**	**216,300**

Table 15 illustrates projections for a "moderate" investment for the transition to e-business. This would involve creating an interactive website, complete with e-commerce capabilities and enhanced intranet and ASP services. This scenario would become profitable for Firm A only if revenue increases were at least 40 percent. For the other two firms, this scenario would be profitable if revenue increases were at least 15 percent.

Table 15: Illustration of Business Case for E-Business Transition - Moderate Investment

Factor	Firm A	Firm B	Firm C
Gains:			
Increased revenues*	50,000	150,000	200,000
Customer retention	17,000	34,000	51,000
Reduced operational expenses	1,200	1,500	1,800
Staff retention	3,000	6,000	9,000
Total Gains	71,200	191,500	261,800
Less:			
- initial investment	35,000	35,000	35,000
- increased operational costs	61,000	61,000	61,000
- additional staff training	1,500	3,000	4,500
Total Net Gains	**-26,300**	**92,500**	**161,300**

*Shown at an increase of 20 percent.

11.0 Summary and Conclusions

The digital environment has matured to the point that the issue for most small firms will be not whether to transition to e-business but how to do so in an affordable manner. The following summarize the strategic findings of this research:

#1: An e-business transition is essential for all except businesses dealing only face-to-face with local customers and suppliers.

#2: There are five core technologies or functions for which firms need to plan: e-mail and Internet access, web presence, intranets, e-commerce capabilities, and extranets.

#3: Traditional financial ROI measures are limited in their ability to assess costs and benefits, and customer-centric measures are needed as well.

#4: Reductions in input costs continue to be a major benefit of e-business and can be achieved through e-procurement without the expense of an online presence.

#5: Operational costs are reduced if a firm's suppliers are also online, and small firms that are suppliers to large firms may be required to operate online.

#6: Customer expectations and online use should drive e-business decisions.

#7: Benefits from e-business can include revenue streams from affiliate programs, which need to be included in the benefits considered.

#8: There are cost substitutions for computerization, pager use, etc. that need to be included in the business case.

#9: Options for small firms are constrained primarily by ASP availability.

#10: Strategy selection needs to be linked to pre-tax profits rather than simply firm size.

In order for the framework developed in this paper to be useful to managers of small firms, it will need to be made available in both hard copy and online formats.

Appendix A
Application Service Provider (ASP) Functions

An ASP provides access to software housed on its Server (or a third-party Server) for a monthly or yearly fee. Under that basic model, there are five types of leasing services that ASPs typically offer:

A. *Basic Internet access*
ASPs may function much like Internet Service Providers (ISPs) and offer services such as e-mail and Internet browsing; however, they typically do so as part of a package of other services.

B. *Office IT infrastructure*
ASPs will manage all computer-related functions. Companies like CenterBeam.com will supply all hardware configured with core software packages, access to additional software on their Server, and 24x7 maintenance and troubleshooting for hardware and software. They will also absorb the costs of any upgrades needed, relieving the customer of this ongoing cost. Data are backed up onto their Server on a continuous basis, giving a high level of protection and data security.

C. *Business software*
ASPs will also provide pay-by-use access to software packages for functions such as accounting, customer relations management, human resources, project management, recruiting, and training. In some instances, ASPs also provide industry-specific applications.

D. *Website design and hosting*
ASPs also offer design, hosting, and remote management of websites, especially for sites that incorporate e-commerce or e-business applications.

E. *Web-based/e-business applications*
ASPs also provide specific web-based applications such as suites of e-business functions, online catalogues, shopping carts, payment facilitation, online processing, site search engines, interactive e-reps, and e-marketplace hosting.

Since the client is using the ASP's equipment and software via a high speed link, the client does not need to continuously upgrade equipment or software as that is the ASP's responsibility. Increased sophistication in ASP development means that ASPs can mount a customized application for a client in a matter of days rather than months, as was previously the case.

Appendix B: Matrix of Potential E-Business Benefits Due to Increases

Benefit Category	Type of Benefit	Measure by subtracting Period 1 from Period 2 for:
Financial	Increase in total revenues Increase in revenues per FTE* Increase in total net profits Increase in net profits per FTE* Increase in off-hour sales Increase in inventory turnover	Revenues Average revenue per FTE Net profit Average net profit per FTE Off-hours sales Ratio of annual sales to average inventory
Customers	Increase in customer satisfaction Increase in repeat purchases Increase in net profit per transaction Increase in number of referrals Up-selling/cross-selling Increase in market share Increase in new customers Increase in online interactions Increased knowledge of customer needs	Customer satisfaction rating Percent of repeat purchase Average net profit per transaction Number of referrals Number of linked purchases Percent of market share Number of new markets Number of new customers Percent of interactions online Percent of customers responding to online surveys
Internal processes	High staff morale Increase staff time on value-added Outsourcing of non-core activities	Staff job satisfaction rating Staff time on value-added Volume outsourced
Partners & suppliers	Supply chain efficiency Increase in partner linkages Increased integration with partners	Time to complete transaction Number of partners Number of integrated functions
Innovation	Customer design input Partner design input Partner delivery input	Number of customer design inputs Number of partner design inputs Number of partner delivery inputs

*FTE = full-time equivalent staff

Appendix C: Matrix of Potential E-Business Benefits Due to Decreases

Benefit Category	Decrease in:	Measure by subtracting Period 2 from Period 1 for:
Financial	Transaction costs Administrative costs Specific expenses, such as: • Long distance calls • Paper supplies • Mailings • Couriers • Inventory • Commissions paid Transaction cycle Collection cycle Cost of sales	Total transaction costs Total administrative costs Long distance charges Cost of supplies Cost of mailings Cost of couriers Inventory volume Commissions paid Days to complete transaction Days to collect receivables Average cost of sales
Customers	Number of complaints Seriousness of complaints Time for complaint resolution Promotional costs	Number of complaints Ratings of complaint seriousness Average time to resolve complaints Promotional costs
Internal processes	Staff turnover Staff time on repetitive tasks Rework	Number of staff leaving Sample times on repetitive tasks Hours spent on rework
Partners & suppliers	Procurement costs Intermediation costs Supply chain cycle time Number of suppliers	Cost of procurement Cost of intermediation Average supply chain cycle time Number of suppliers
Innovation	Innovation failures	Number of innovation failures

Appendix D: Measuring Potential E-Business Set-Up Costs

Cost Category	Set-Up Cost	Measure	Average Cost
Financial	Online payment processing set-up fee	Set-up fee charged by financial institution	
Customers	Consultations with customers ($5,000 average)	Design/set-up charge for creating an extranet	
Internal processes	Process mapping & redesign New policy development Procedural changes Recruiting new partners	Estimated staff time spent x average salary	
	Staff skills training	Fees paid for staff training + staff time spent in training x average salary	
	Linking with partners/suppliers	Design/set-up charge for creating an extranet	
ICT infrastructure (if not yet connected)	Computer equipment Modem	Cost of equipment and installation	
	Server, or hosting agreement Basic software & e-mail ISP connection	Fees charged for setting up accounts and/or initial connection	
ICT infrastructure (once connected)	High speed Internet connection Voice-over-IP set-up	Fees charged by provider	
	Design & programming of site	Fees charged by provider	
	Enlarged Server capacity	Cost of acquisition	
	Data digitalization	Cost of data input and/or scanning and repair	
	Integration of legacy online	Consultant fees	

Appendix E: Measuring Potential E-Business Operational Costs

Cost Category	Operational Cost	Measure	Average Cost
Financial	More expensive hosting contract Increased utility costs 1-800 or voice-over-IP service	Fees charged by providers	
	Online payment processing fees	Fees charged by online host + bank	
	Audits of web traffic	Consultant fees	
Customers	Loss of “bricks” revenues	Change in revenues	
	Promotion of online capability Online promotion	Consultant fees	
	Extended staffing to 24x7	Additional personnel charges	
Internal processes	Subscription to content feeds Content translation	Fees charged by provider	
	Liaison time with partners	Estimate of staff time x salary	
Innovation	Continuous redesign Content updating Customer data mining Analysis of customer feedback	Estimate of staff time involved x salary	
ICT infrastructure	Equipment upgrades Software upgrades Programming of new content Intranet hosting Extranet hosting Web presence hosting E-mail service Data backup & warehousing Data security	Consultant or provider fees	

Appendix F
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