An Exploratory Investigation of Organizational Factors and e-Business Motivations Among SMFOEs in the US

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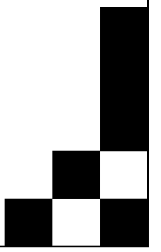

Abstract

It is well recognized that e-business supports all parts of an organization's value chain, and offers valuable competitive advantage to firms. SMFOEs (Small and Medium-sized Family Owned Enterprises) represent the majority of firms worldwide and yet many have lagged in their adoption of e-business. This paper investigates the influence of key organizational demographics, owner/manager characteristics, and organizational strategy on SMFOEs' motivations for e-business. Eight hypotheses were formulated and tested. Characteristics found to have the greatest influence on e-business motivation are the business strategy of the firm, new product strategy, and market scope. Owner/manager education, industry sector, and firm size were also influential, but to a lesser degree. The overall conclusion is that e-business is in the early stages of evolution in small organizations and is favoured largely by entrepreneurial and innovative firms.

Keywords: e-commerce, family business, e-business, small business

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INTRODUCTION

Recent work suggests that the Internet may be revolutionizing traditional small business practices (Daniel *et al.* 2002; Geiger and Martin 1999; Lee 2001; Siu 2002). By offering location and time independence, and ease of communication, the Internet can help small firms gain efficiencies and cost savings that previously only larger firms could enjoy (Iacovou *et al.* 1995; Longenecker *et al.* 1997; Weller 2000), thereby providing a more 'level playing field' (Grandon and Pearson 2004; Pflughoeft *et al.* 2003). An increasing number of small firms have turned to the Internet to promote and sell their wares on a 24/7 basis and to potentially worldwide markets (Pratt 2002).

Yet, many small firms have lagged in their adoption of e-business while others have not embraced it at all (Auger and Gallaugher 1997; Thong and Yap 1995; Zank and Vokurka 2003). Despite numerous advantages, about one-third of small firms do not use the Internet at all (Pratt 2002), and more than 80% use it only for email and gathering business information (Pratt 2002) – far less than its full potential (Grandon and Pearson 2004; O'Connor and O'Keefe 1997; Webb and Sayer 1998).

A variety of reasons have been offered for the apparent reluctance of some firms to engage in e-business, notably financial and human resource constraints, and the failure to see its benefits (Auger and Gallaugher 1997; Barnes *et al.* 2003; Davies and Garcia-Sierra 1999; Grandon and Pearson 2004; Grossman 2004; Scupola 2003). Of these, the failure to understand benefits is most critical (Scupola 2003), since it increases the perceived risk of engaging in e-business.[1]

This issue of perceived benefits is especially critical for Small and Medium-sized Family Owned Enterprises (SMFOEs), the focus of this study, since perceptions of benefits furnish the motivations to engage in e-business. Within the US, family owned firms account for between 80 and 95% of all incorporated businesses (Gersick *et al.* 1997; Poza 2004; SBA 2004b), making SMFOEs the most common form of business organization in the US (Daily and Dollinger 1991). SMFOEs have also been characterized as conservative and risk averse (Donckels and Frohlich 1991;

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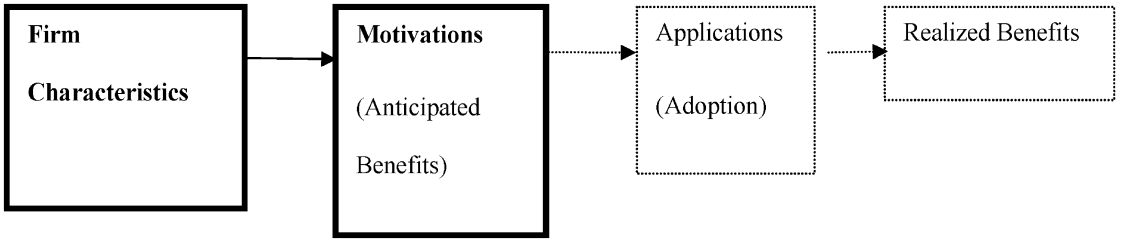

Figure 1. The conceptual model

Gudmundson *et al.* 1999; Ward 1997), making the issue of e-business motivations even more salient.

Our research interest is to examine the characteristics of SMFOEs that are motivated to adopt e-business, as highlighted in Figure 1. The broader context of this study (Figure 1) is provided to suggest that motivations (or anticipated benefits) lead to the adoption of e-business applications, which, in turn, lead to realized benefits, which may be different from initial motivations. However, this research focuses only the relationship between firm characteristics and e-business motivations. It differs from prior works in that its focus is on e-business *motivations*, rather than either *adoption of e-business applications* or *realized benefits*, which comprise a majority of the literature published to date (e.g., Auger *et al.* 2003; Daniel *et al.* 2002; Korchak and Rodman 2001; Lituchy and Rail 2000; Pratt 2002). To this end, we reviewed the literature on family owned businesses to identify the three categories of organizational variables that are important in the context of SMFOEs: (1) firm characteristics (size, age, market scope and industry); (2) business strategy (strategic orientation and new product strategy); and (3) owner/manager characteristics (age, education and leadership style). Nineteen e-business motivations were also gleaned from the literature.

The study has theoretical as well as practical significance. In theoretical terms, this exploratory study contributes towards the development of models and frameworks necessary to study the use of e-business by small firms. The e-business literature has primarily focused on large organizations, which may not be appropriate for smaller firms (Blau *et al.* 1966; Blili and Raymond 1993; Cohn and Lindberg 1972; Dandridge 1979; DeLone 1981; Smeltzer *et al.* 1998; Welsh and White 1981) due to various fundamental differences (Blili and Raymond 1993; DeLone 1981; Raymond 2001; Smeltzer *et al.* 1998; Welsh and White 1981) in terms of organization structure, standardization and staff development (Ghobadian and Gallear 1996), number of services offered, value and volume of transactions, and the capacity to innovate among many others (Auger and Gallaugher 1997; Julien and Raymond 1994). Additionally, while a few studies have addressed the use of e-business among small firms (e.g., Raymond 2001, cupola 2003), none have focused on SMFOEs, which is surprising given their prevalence in the US economy. Thus, the results of this study may be of practical value to technology-related service providers and government agencies that support SMFOEs since it has been found that the quality of these service providers and government interventions are very important in small firms' e-business adoption and implementation (Pflughoeft *et al.* 2003; Scupola 2003).

RESEARCH MODEL AND HYPOTHESES

The research model includes Firm Characteristics and e-Business Motivations as shown in Figure 2. Being an early, exploratory study, the focus was on primary associations. A single stage model was adopted that directly related dependant variables with independent variables without any intermediate variables. The model can be refined with further experience. We first look at e-business motivations and then at the firm characteristics, where we develop the hypotheses. The focus is on SMFOEs, however, given the limited e-business research on this group of firms, we had to look at research on SMEs in general where no research on SMFOEs was available.

e-business motivations

We define an e-business motivation as a reason or a business goal that provides impetus and direction for a firm to adopt e-business applications. Organizations anticipate certain benefits from implementing e-business applications, and these anticipated benefits (e.g., increased sales) drive decision making regarding technology adoption (Wagner *et al.* 2003). Subsequent to their adoption, the firm gathers information concerning the extent to which it believes its goals (i.e., motivations) were achieved. What is actually realized may be the same as or different from the initial motivations. For example, a firm may be motivated to engage in e-business out of a desire to increase sales. After deploying the e-business applications the firm deems necessary to increase sales, it may find that it is able to not only increase sales, but reduce the cost of sales and increase the firm's image. Indeed, it may not even realize any increase in sales, but may instead realize other benefits.

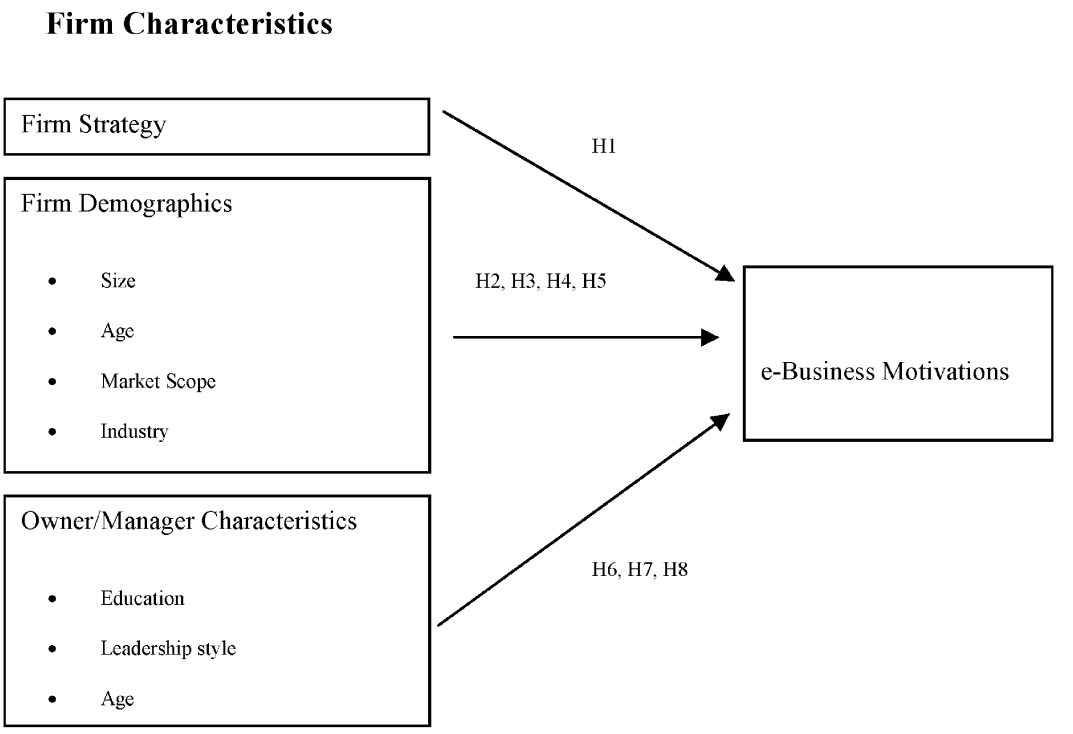

Figure 2. A model of e-business motivations (operational)

To date, only a few studies have attempted to identify small firms' motivations for engaging in e-business (i.e., Access Markets International 2001; Berrill *et al.* 2004; Downie 2003). A review of these works suggests that small firms' e-business motivations fall into four categories, based on identified business goals: (1) gaining a competitive advantage through marketing (Berrill *et al.* 2004; Downie 2003); (2) improving communications (Access Markets International 2001; Berrill *et al.* 2004); (3) improving internal operations (Access Markets International 2001; Berrill *et al.* 2004); and (4) accessing information (Access Markets International 2001).

Since e-business motivations are anticipated benefits, the review of the literature was expanded to draw upon two additional areas: (1) theoretical/conceptual benefits of adopting e-business; and (2) the benefits of e-business as reported in empirical studies. Theoretical/conceptual benefits associated with adopting e-business are reported in numerous publications, ranging from academic journals and textbooks to trade literature and the popular press (e.g., Auger *et al.* 2003; Damanpour 2001; Downie 2003; Evans 2001; Griffith and Palmer 1999; Korchak and Rodman 2001; Nelton 1998; Roadcap *et al.* 2002; Scupola 2003; Urwin 2000; Zank and Vokurka 2003). In these works, 'benefits' are generally understood to be things that enhance the competitiveness and well-being of an organization and are introduced as 'possibilities,' and are not empirically validated.

The second category of literature focuses on e-business benefits identified by empirical studies (e.g., Levenburg *et al.* 2002; Poon and Swatman 1999; Pratt 2002; Zhuang and Lederer 2003). While the list of reported benefits is long and varied, upon close inspection, some items that are reported as 'benefits' appear to be functional features of applications, rather than realized benefits. For example, while Zhuang and Lederer (2003) categorize the ability to customise sales presentations as an e-business benefit, we believe that customization is a functional attribute of selected applications, which may lead to some benefit, such as increased sales or customer satisfaction. As another example, Poon and Swatman (1999) identify the ability of facilitate online purchases and transactions as an e-business benefit; yet we believe these are essentially characteristics of e-commerce applications, which may lead to benefits such as increased sales or reduced transaction costs.

In all, a total of 19 e-business motivations were gleaned from the research streams described above, and can be grouped along four major categories:

1. building relationships (e.g., customers, suppliers, or employees);
2. marketing, sales and service (e.g., improve corporate image, attract customers, or distribute information);
3. improving financial performance (e.g., reduce cost of sales or delivery);

4. obtaining information (e.g., finding new sources of supply, industry-related information, or marketing intelligence).

It should be noted that the 19 motivations are not intended to be an exhaustive list; rather, they form a representative list.

Characteristics of the firm

The literature suggests various factors as influential to family owned businesses, including:

1. firm strategy (strategic orientation);
2. firm demographics (age, size, industry sector, market scope); and
3. firm owner/manager characteristics (age, education, leadership style).

Given the paucity of extant research on e-business motivations, we relied on IS adoption literature to derive the hypotheses. Additionally given our focus on SMFOEs, we further drew upon literature on small and medium-sized enterprises (SMEs) and family firms.

Firm strategy

A firm's strategy provides a broad framework for decision making and influences behaviour with respect to innovation. We operationalize firm strategy using the Miles and Snow typology (1978) which identifies four strategic types based on the intended rate of product-market development: Innovators/Prospectors, Defenders, Analysers and Reactors. Innovators/Prospectors grow by developing new products and markets and they are usually strong in, and devote substantial resources to, two broad areas of competence: (1) new product management, including use of new technologies; and (2) marketing. Defender businesses focus on maintaining their positions in established product-markets while devoting less attention to new product development. Analyser businesses follow industry leaders closely while Reactors generally must be pressured by the market before making a change. Numerous studies have applied Miles and Snow's typography to understand the strategic orientation of firms (e.g., Daily and Dollinger 1991, 1992; Upton *et al.* 2001).

Certain strategies are more conducive to innovation. For example, entrepreneurial firms have an outward focus, are proactive and aggressive, vigorously pursue new opportunities, and are willing to take risks to find innovative solutions to challenges (Auger *et al.* 2003); entrepreneurial firms tend to follow the Innovator/Prospector strategy (Lumpkin and Dess 1996). In the small business literature, studies have found that firms with an entrepreneurial strategy are more likely to experience sales growth (Freel 2000; Shirk 2003), have a more positive attitude towards the Internet, and are more likely to be first-movers in e-business (Attewell 1992; Auger *et al.* 2003; Chaston and Mangles 2001). Consequently, we expect that firms that pursue an Innovator/Prospector strategy will have stronger motivations for e-business than will other strategic types.

H1: SMFOEs with an Innovator/Prospector strategic orientation are more motivated to adopt e-business than those with other strategic orientations.

Firm demographics

Family owned firms differ in their goals, strategy, implementation and organizational performance based on the firm's demographic characteristics (Sharma *et al.* 1997). The demographic characteristics included in this study are: the age of the firm (Goode and Stevens 2000, Miller *et al.* 2001), the size of the firm (Davis and Harveston 2000; Gudmundson *et al.* 1999; McCann III *et al.* 2001; Upton *et al.* 2001), and the industry sector in which the firm operates (Longenecker *et al.* 2003; Martin and Matlay 2003; Raymond 2001). Each of these is explained below.

Age. While the age of the firm has been investigated in various contexts (e.g., degree of entrepreneurship (Entrialgo *et al.* 2001) and choice of strategy (Miller *et al.* 2001)), only one study has examined the influence of age on adoption of e-business. Goode and Stevens (2000) hypothesized that older firms are more likely to adopt the Web than newer firms, as older firms have more experience and resources to adopt innovation. However, their data indicated that newer firms are more likely to adopt the Web than older firms and offer two explanations for this seeming inconsistency. First, adopting the Web may not require the experiences and resources that are needed for traditional technology innovations. Second, older firms may have more rigid business processes and infrastructure that are not conducive to the type of innovation required when adopting the Web. Younger firms are likely to be more flexible and without infrastructure constraints and will therefore be more motivated to adopt e-business applications than older firms.

H2: Newer SMFOEs will be more motivated to adopt e-business than older SMFOEs.

Firm size. It has been argued that firm size is an important organizational characteristic influencing technology adoption (Goode and Stevens 2000; Raymond 2001; Rogers 1983). The typical argument is that larger firms have a greater need, resources, skills and expertise

and the ability to survive failures than smaller firms. However, the empirical evidence is somewhat mixed (Damanpour 1996; Goode and Stevens 2000; Lertwongsatien and Wongpinunwatana 2003; Roadcap *et al.* 2002). Goode and Stevens (2000) attempt to explain this inconsistency as a function of traditional vs. e-business technologies and suggest that older studies (involving traditional technologies) find a positive relationship between size and adoption while newer studies (involving e-business technologies) find negative relationships.

Traditional technologies tend to be expensive, relatively stable and complex, and require significant financial and personnel resources. Therefore, only larger firms may be able to adopt them, as they have the necessary resources, skills, knowledge, experience and need (Damanpour 1996; Montazemi 1988). Consequently, older studies focusing on traditional technologies find positive relationships between size and adoption.

Many newer e-business technologies are substantially less expensive, require less support infrastructure, are rapidly evolving, and offer smaller firms a way to compete with larger firms (Goode and Stevens 2000; Ives and Jarvenpaa 1996). Therefore, newer technologies are very attractive to smaller firms that have fewer resources but are nimble and innovative enough to invest in evolving technologies. Consequently newer studies focusing on e-business technologies find a negative or no relationship between size and adoption. Extending these arguments to e-business motivations, we expect smaller firms to be more motivated than large firms, leading to the following hypothesis:

H3: Smaller SMFOEs are more motivated to adopt e-business than larger SMFOEs.

Industry sector. There is evidence that the industry sector in which a firm operates influences adoption of e-business technologies (Longenecker *et al.* 2003; Miller *et al.* 2001; Raymond 2001). E-business has the potential to dramatically alter the nature of some industries, particularly those that are more information intensive and those that offer products and services that are digital in nature. The software industry is a good example where the manner in which the product is sold and delivered (online vs. physically) has fundamentally changed with the advent of e-business. Other examples are the travel and publishing industries, where entirely new business models are emerging. On the other hand, because of the nature of products as against services, the manufacturing sector is likely to see less dramatic changes.

Goode and Stevens (2000) hypothesized that the service industry would be the largest adopters of the Web followed by the retail and manufacturing industries. This was based on the argument that service industries are more reliant on information and information processing than the others and consequently would realize more benefits from the Web. However, their data did not support this hypothesis. Similarly, Thong (1999) suggests that differences in adoption between industry sectors are a result of differences in information intensity of the product or service. His results found support for differences in likelihood of adoption. This leads us to:

H4: The industry sector of the SMFOE influences its motivations to adopt e-business.

Market scope

An often mentioned benefit of e-business is the ability to reach broader markets. The ability to promote and, in some cases, sell and deliver products and services online provides SMFOEs with the potential to reach a global market (Longenecker *et al.* 2003; Zimmerer and Scarborough 2002). This is especially relevant for small businesses that often do not have the resources needed to expand their markets in traditional ways (Buskirk and Lavik 2004). Arguably, firms that serve broader markets are more likely to engage in e-business activities.

H5: SMFOEs that serve broader markets will be more motivated to adopt e-business than those serving smaller markets.

Owner/manager characteristics

Top management support is generally held to be critical to the successful implementation of innovation. This is because the firm's leaders are the main decision makers, influence the allocation of key resources, and, as project champions, generate enthusiasm for and commitment to IT within the organization (Lertwongsatien and Wongpinunwatana 2003; Martin and Matlay 2003; Rai and Patnayakuni 1996; Thong 1999; Thong and Yap 1995; Tornatzky and Fleischer 1990). This support may be particularly important within small firms, since they often lack experience and expertise with using newer technologies (O'Toole 2003) and, consequently, may regard the undertaking as a risky venture.

Numerous studies have demonstrated that the characteristics of small firms' owners/managers can affect the perception, adoption and development of technologies in SMEs (e.g., Chen and Williams 1998). Consequently, we expect that these owner/manager characteristics will also influence their motivations to engage in e-business. In particular, leadership style, education, and age have been found to be key variables.

Leadership style. Scupola (2003) identified the CEO's leadership behaviour as the most important element in initiating and encouraging adoption of Internet

applications. This is because the leader's stance influences employees' knowledge and resistance to change, ultimately facilitating the adoption process within the organization (Poon and Swatman 1999; Scupola 2003). Of the five types of leadership styles (i.e., participative, autocratic, laissez-faire, expert, and referent) identified by Dyer (1986), participative leaders encourage a group-oriented culture in which all employees are valued and viewed as resources for information and problem solving. Sorenson (2000) found a significant and positive association between participative leadership and business performance, which was explained based on two factors: (1) participative leaders promote change and allow for the integration of different perspectives into decisions; and (2) participative leadership encourages commitment since 'the efforts of a few people have to make a large difference' (Sorenson 2000: 194), which are similar to the factors Damanpour (2001) found were influential in the successful adoption of e-business. Therefore, since participative leaders are more receptive to (and indeed, encourage) change initiatives (Sorenson 2000), we posit that they will be more likely to facilitate innovation and, therefore, will be more motivated to adopt e-business.

H6: Owners/managers with a participative leadership style are more motivated to adopt e-business than those with other leadership styles.

Owner/manager education. There is evidence that education is an important determinant of adoption success (Auger and Gallaugher 1997). Knowledge deficiencies raise barriers to technology adoption (Attewell 1992). Datta and Guthrie (1994) found that a positive correlation exists between leaders' formal education and the propensity of the firm to implement change and foster firm growth. Siu (2002) found that owner/managers of Internet-based firms are more educated than their counterparts in traditional firms.

H7: Owners/managers with higher levels of education will be more motivated to adopt e-business than those with less education.

Owner/manager age. Auger and Gallaugher (1997) argue that younger users are more likely to use Internet technology than older users. Among family businesses, Poza (2004) suggests that younger family members tend to be more receptive to adoption of new technologies in their firms than their older relatives and that next-generation family members are more likely to want to pursue new products and e-business opportunities.

H8: Younger owners/managers will be more motivated to adopt e-business than older owners/managers.

DATA COLLECTION

A self-administered questionnaire was developed as part of a larger study to collect data regarding characteristics and e-business motivations. The questionnaire included the 19 specific motivations identified from the literature. The respondents were asked to indicate, on a five-point Likert-type scale, the level of importance of each item in motivating them to engage in e-business. Further, they were asked to provide data on the characteristics of interest.

The survey instrument was carefully pilot tested on a few owners of SMFOEs and vetted for clarity and applicability. The final survey instrument incorporated many of the modifications suggested by the pilot study group. The survey package consisted of: 1) A covering letter introducing the researchers and the purpose of the research; 2) The four-page questionnaire booklet; 3) A postage-paid return envelope.

The questionnaire was mailed to 9,365 CEOs (or owners) of family owned businesses in the US with their number of employees less than 500. For research purposes, the US Small Business Administration (SBA) has traditionally defined small businesses as less than 500 employees (SBA 2004a). For government purposes, while its size standards were recently revised to vary by industry (as defined by the North American Industrial Classification System (NAICS)), with the exception of the wholesale trade, the size maximum for most sectors remains at 500 employees. In previous work, some define small and medium-sized firms as less than 100 employees and 100–499, respectively (Bajwa and Lewis 2003; Daily and Dollinger 1992). However, firms with fewer than 500 employees is a commonly used criterion to distinguish SMEs from others (Bajwa and Lewis 2003; Daily and Dollinger 1992; Grandon and Pearson 2004; Pflughoeft *et al.* 2003). Four hundred and thirty nine responses were received for a response rate of 4.7%. The low response rate was of concern and a sampling (1,262) of the non-respondents was contacted to determine reasons for not participating. Of these, 191 (15.5%) were determined to be no longer in existence. Excluding the surveys sent to defunct businesses results in a response rate of 5.5%. The low response rate appears to be typical in studies of SMEs. Pflughoeft *et al.* (2003) had a response rate of 3.35%. Other researchers have experienced similar response rates (Grandon and Pearson 2004; Pavlou 2003; Thong 1999). Various reasons have been proffered for the low response rate including lack of relevance of the topic to the respondent, perception that the time spent on survey does not add value compared to other tasks, length of the survey instrument, too many surveys focused on the same population and change or closure of businesses as SMEs appear to have high mortality rate (Grandon and Pearson 2004; Poon 2000; Singh *et al.* 1986). They might also be unwilling to furnish truthful information:

Table 1. Firm demographics

Annual Revenues	*N*	*%*	*Industry*	*N*	*%*	*Market scope*	*N*	*%*
Under $100,000	10	2.5	Agriculture/Forestry	4	1.0	Local	128	31.8
$100,000–$499,999	31	7.8	Manufacturing	127	31.8	Regional	147	36.6
$500,000–$999,999	31	7.8	Services	68	17.0	National	95	23.6
$1.000,000–$4,999,999	103	25.9	Wholesale/Distribution	57	14.3	International	32	9.0
$5,0000,000–$9,999,999	97	24.4	Construction	49	12.3			
$10,000,000 or greater	125	31.5	Retail	56	14.0			
			Transportation	6	1.5			
			Other	33	8.3			

'If a small business is successful, the knowledge of how to achieve it is valuable and therefore they may not want to reveal it. If a small business has not been successful, then it is very likely that they will have little to tell' (Poon 2000: 76).

Comparing responses from early and late respondents is a recommended method of detecting non-response bias (Armstrong and Overton 1977; Lambert and Harrington 1990) and is widely used (Grandon and Pearson 2004; Pavlou 2003; Thong 1999). Contacting the 1,262 non-respondents resulted in an additional 62 responses. Our analysis using t-tests found no significant difference in the responses between the two groups, suggesting a low likelihood of non-response bias.

The data were analysed further for additional explanations of the low response rate. Of the respondents, 82% had revenues of greater than $1 million and 18% had revenues ranging from under $100,000 to $1 million. Arguably, extremely small businesses are less likely to engage in e-business activities, simply because their size may not justify the cost associated with even setting up for electronic mail or access to the Web. These small family owned businesses are likely to be one-person or 'mom and pop' operations, who are unable to engage in e-business activities, and are not likely to respond. Thus, there is a bias towards firms that do engage in e-business activities.

First, descriptive data on the variables of interest are presented. The specific hypotheses are then tested using analysis of variance.

RESULTS

As shown in Table 1, the firms in the sample represent a wide range of industries including manufacturing, services, wholesale/distribution, construction and retail. They serve both the industrial and consumer sectors, produce both goods and services, and supply local, regional and national markets, and to a lesser extent, international markets.

Additionally, data were collected on firm strategy, as shown in Table 2. Defenders accounted for 45% of the sample; that is, they stick to what they know and do it well; 37% were Innovators/Prospectors that are willing to take risks. Analysers provided 8% of the resposes with the remaining 10% as Reactors. This is consistent with prior findings (e.g., Daily and Dollinger 1992; Upton *et al.* 2001) that the majority of family firms follow either a Defender or Prospector strategy.

Characteristics of the CEO are provided in Table 3. Most (66% of the CEOs are between 45 and 64 years of age. Over 85% had at least some college education. The predominant leadership style is participative (59%), followed by laissez-faire (14%). Referent and autocratic leadership styles, combined, accounted for less than 15% of the sample.

Motivations for engaging in e-business

Table 4 lists the importance ratings of the 19 specific motivations for adopting e-business applications. The

Table 2. Strategic orientation

Business strategy	*N*	*%*	*New product strategy*	*N*	*%*
Defender	177	45.0	First to market	162	42.2
Prospector	146	37.2	Early follower	113	29.4
Analyser	31	7.9	In step with competitors	99	25.8
Reactor	39	9.9	Late follower	10	2.6

Table 3. Owner/manager characteristics

CEO age	*N*	*%*	*CEO education*	*N*	*%*	*CEO leadership style*	*N*	*%*
Under 45	68	16.9	Less than high school graduate	6	1.5	Participative	234	58.9
45–54	126	33.8	High school graduate	53	13.2	Expert	47	11.8
55–64	138	31.8	Some college	100	24.9	Referent	30	7.6
65 or older	70	17.4	College graduate	189	47.1	Laissez-faire	57	14.4
Under 45	68	16.9	Post graduate degree	53	13.2	Autocratic	29	7.3
			Less than high school graduate	6	1.5			

five most important (highlighted in Table 4) are to improve communications with customers, enhance company image/brand, distribute product/company information, provide or improve customer support, and generate sales leads. All these are marketing or customer-related.

The 19 motivations were analysed to identify the underlying factors. A principle components analysis using a varimax rotation identified four factors with eigenvalues greater than one. The results of this analysis are displayed in Table 5. The four factors were labelled Marketing, Communication, e-Profitability, and Research. The questions were evaluated for reliability and validity as follows.

The factor analysis provides evidence of construct validity, that is, the questions are indeed measuring the constructs they are intended to measure. All loadings were greater than 0.50 with 17 of 19 greater than 0.60.

Table 4. E-business motivations

	Motivation	*Importance*
1	Enhance company image/brand	3.96
2	Distribute product/company information	3.95
3	Identify new markets or customers	3.53
4	Generate sales leads	3.75
5	Gain an edge over competition	3.58
6	Improve communications with customers	3.96
7	Improve communications with channel partners	2.68
8	Improve communications with employees	2.49
9	Comply with requirements of a large customer or supplier	2.66
10	Sell products online	2.62
11	Improve marketing intelligence	3.08
12	Find information about new sources of supply	3.18
13	Find information on industry or other economic data	3.21
14	Reduce administrative costs	2.71
15	Reduce direct costs of creating product or service	2.38
16	Reduce shipping costs	1.98
17	Reduce advertising expenses for traditional media	2.73
18	Increase net profit	3.36
19	Provide or improve customer support	3.78

The four factors explained 66.7% of the variance. The reliabilities (alpha) were 0.87, 0.80, 0.86 and 0.77. This is strong evidence of construct validity.

Convergent validity is the extent to which each measure correlates with measures in the same construct or factor. High correlations indicate convergent validity. Correlations among the 19 motivation items were significant at alpha=0.0001. For the Marketing factor, 14 of 15 correlations are greater than 0.4; for the Communication all six are greater than 0.4; for e-Profitability 14 of 15 are greater than 0.4; for Research all three are greater than 0.4. This provides evidence of convergent validity.

Internal consistency is determined by assessing item-total correlations. All 19 of the item-total correlations were greater than 0.5 with 14 greater than 0.60 providing strong evidence of internal consistency.

Discriminant validity is the extent to which each measure differs from measures in other factors and is determined by counting the number of times a measure has a higher correlation with a measure from another factor than with a measures in its own factor. Only 38 of 281 correlations were higher, providing evidence of discriminant validity.

Table 5 also presents the mean importance ratings of the four factors. As can be seen, Marketing is considered the most important reason for adopting e-business applications. This is consistent with the fact that four of the top five individual items (Table 4) are marketing related. The second most important motivation is Communication, presumably aimed at strengthening relationships with key constituents. Profitability (online sales, reducing costs) was the least important motivation and is the only factor rated on the unimportant (<3.00) side of the 5-point Likert scale. This is noteworthy and warrants further exploration. One explanation is that the applications used to produce sales and cost savings online (e.g., shopping cart software, order tracking systems) are more sophisticated and expensive, and require dedication of a higher level of resources and technical expertise than is likely to be available in small firms. Thus, the desire to enhance profitability through online operations may be a more appropriate goal for larger, resource-endowed firms.

Table 5. Results of the factor analysis

	Factor →	*Marketing*	*Communication*	*e-Profit*	*Research*
1	Enhance company image/brand	.81			
2	Distribute product/company information	.88			
3	Identify new markets or customers	.69			
4	Generate sales leads	.68			
5	Gain an edge over competition	.63			
6	Improve communications with customers		.61		
7	Improve communications with channel partners		.83		
8	Improve communications with employees		.65		
9	Comply with requirements of a large customer or supplier		.70		
10	Sell products online			.62	
11	Improve marketing intelligence				.57
12	Find information about new sources of supply				.81
13	Find information on industry or other economic data				.75
14	Reduce administrative costs			.76	
15	Reduce direct costs of creating product or service			.77	
16	Reduce shipping costs			.68	
17	Reduce advertising expenses for traditional media			.64	
18	Increase net profit			.61	
19	Provide or improve customer support	.52			
	Mean Importance Rating	3.67	3.17	2.56	3.05
	Cronbach's Alpha:	.87	.80	.86	.77
	Eigenvalue:	8.07	2.215	1.36	1.07
	Variance Explained:	42.47%	11.34%	7.17%	5.62%

HYPOTHESES TESTING

To facilitate hypotheses testing, the firms were first divided into groups based on variables of interest. Most of the variables were collapsed into fewer (two or three) categories. The GLM procedure (in SAS) was employed to test for overall differences in mean importance ratings between groups, and the Tukey method was used for post-hoc testing for specific differences (multiple pair-wise comparisons). The results are presented in Tables 6, 7, and 8.

The first hypothesis related to firm strategy as measured by the strategic orientation indicate very strong results (α=0.01). Firms identifying themselves as Innovators indicated that Marketing, e-Profitability and Communication were stronger motivators for them than for other firms (see Table 6).

The next set of hypotheses (H2–H5) relates to the firm demographics of age, size, industry sector and market scope (Table 7). Firms were divided into three groups based on the year in which they were founded, using 1960 and 1980 at break points. The model for age is significant (α=0.05) and the difference is in the Marketing motivation only. Older firms place the greatest emphasis on Marketing followed by the newest firms, with firms in the middle group rating Marketing as the least important. This partially supports the contention that older firms possess the experience and resources to pursue technological innovation. Further, the older firms may be operating at a mature stage in their life cycle such that the ability to innovate may be necessary to survive or grow. The youngest firms are perhaps attracted to e-business as their primary means to compete. They may view the use of e-business as a key part of their business strategy.

To test the hypothesis for size, firms were divided into two groups – those with revenues above and below $1 million. The overall model is significant at α=0.10. While this is greater than the traditionally accepted significance level of 0.05, it is included given the exploratory nature of this study. Research is the only

Table 6. Hypothesis testing: Strategic orientation

Business strategy	*Innovators*	*Non-innovators*	*Significance*
Overall model			***
Marketing	3.94	3.64	***
e-Profitability	2.90	2.47	***
Communication	3.35	3.08	**
Research	3.22	3.08	NS

NS:Not significant; *:significant <0.10; **:significant <0.05; ***:significant <0.01

Table 7. Hypothesis testing: Firm demographics

Age (Year Founded)	*<1960*	*1960–1980*	*>1980*	*Significance*
Overall model				**
Marketing	3.86	3.54	3.81	**
e-Profitability	2.70	2.49	2.64	NS
Communication	3.2	3.22	3.12	NS
Research	3.10	3.10	3.21	NS
Size (Revenue)	*<$1 million*	*⩾ $1 million*		*Significance*
Overall model				*
Marketing	3.70	3.76		NS
e-Profitability	2.72	2.60		NS
Communication	3.16	3.19		NS
Research	3.40	3.07		**
Industry	*Manufacturing*	*Services*	*Retail*	*Significance*
Overall model				**
Marketing	3.76	3.80	3.61	NS
e-Profitability	2.50	2.78	2.59	*
Communication	3.15	3.29	2.94	NS
Research	3.21	3.13	2.88	NS
Market served	*Local/Regional*	*National/International*		*Significance*
Overall model				*
Marketing	3.66	3.94		**
e-Profitability	2.51	2.83		***
Communication	3.01	3.36		**
Research	3.05	3.30		*

NS:Not significant; *:significant <0.10; **:significant <0.05; ***:significant <0.01

factor that was significantly different, with smaller firms rating the importance of research higher than larger firms. Larger firms may have more resources to devote to research than smaller firms and may not place much significance on online sources of information. Conversely, the ready availability of information online may be more important to smaller firms that are constrained by time and financial resources. In fact, it may often be their only source of information. This is consistent with Pratt (2002) who found that one of small businesses' greatest uses of the Internet was to obtain information.

The model for industry was significant (α=0.05) and only e-Profitability was rated differently across industries. The service industry rated e-Profitability as most important among the three industry groups, followed by retail and manufacturing. Goode and Stevens (2000) argue that service industries, being more information intensive, are more likely to adopt e-business, followed by retail and manufacturing. While their study did not find support for this hypothesis, our study does support it, at least in terms of motivations for e-business. Taken together, we can conclude that while service industries have the strongest motivations, followed by retail and manufacturing, no differences exist in terms of actual adoption.

The overall model for market scope is also significant (α=0.10). Specific differences were found for all four motivations (α=0.05). In all cases, firms serving national and international markets rate the motivations as more important than firms serving local and regional markets. A frequently cited reason for going online is to expand geographic markets. Arguably, firms with a broader market scope view e-business applications as a way to reach and serve their dispersed markets more efficiently, a capability that may be unnecessary in serving local markets, where face-to-face communications is the norm.

The final three hypotheses focused on the owner/CEO characteristics of age, education and leadership style (Table 8). The only model that was significant was for the effects of CEO education, with more educated CEOs indicating that the use of e-business for Marketing is more important than less educated CEOs. Historically, the Internet was extensively used in

Table 8. Hypothesis testing: CEO characteristics

CEO Age	*<55*	*⩾55*	*Significance*
Overall model			NS
Marketing	3.79	3.70	NS
e-Profitability	2.59	2.67	NS
Communication	3.13	3.24	NS
Research	3.10	3.16	NS
CEO Education	*<College graduate*	*⩾=College graduate*	*Significance*
Overall model			***
Marketing	3.58	3.86	***
e-Profitability	2.66	2.60	NS
Communication	3.17	3.19	NS
Research	3.26	3.05	NS
CEO leadership style	*Participative*	*Other styles*	*Significance*
Overall model			NS
Marketing	3.80	3.64	NS
e-Profitability	2.67	2.51	NS
Communication	3.21	3.12	NS
Research	3.14	3.13	NS

NS: Not Significant; *: significant <0.10; **: significant <0.05; ***: significant <0.01

government and academic settings prior to being used for commercial purposes. Its users were largely college-educated (Strauss and Frost 2001). Therefore, it is likely that small business owners possessing higher levels of education are more likely to have had exposure to and experience with using the Internet in their academic studies. Consequently, they are more likely to adopt e-business in their organizations with greater insight and finesse.

SUMMARY AND CONCLUSIONS

It is said that in the last decade e-business has revolutionized the business world. SMFOEs form the single largest group of firms in most economies worldwide; yet it has been found that many are severely lagging in their adoption of e-business. Although e-business can provide them with some of the strengths and benefits available to large firms, few SMFOEs seem to be motivated towards e-business.

This study examined the effects of firm characteristics on the motivations of SMFOEs to adopt e-business. Various factors influencing motivations for engaging in e-business were investigated and the results are summarised in Table 9. Six of the eight hypotheses were supported. The strongest results were obtained for both measures of firm strategy and market scope. Whereas on the side of dependent variable, the Marketing motivation was the one that was most influenced by various firm characteristics. Innovative firms are more motivated to adopt e-business applications than other firms. For most small firms, e-business represents an innovation with associated risks and it makes sense that entrepreneurial firms pursuing an Innovator/Prospector strategy are more likely to take such risks.

CEO education, industry and firm size were found to be significant determinants of e-business motivations, but to a lesser degree. Smaller firms were more motivated to adopt e-business for Research reasons; more educated CEOs were motivated by Marketing reasons; and the service sector was more motivated for e-Profitability, followed by retail and manufacturing.

Among the four dimensions of e-business motivations, the Marketing factor emerged as the most important. It is noteworthy that none of the factors attained a rating of 4.0 (somewhat important) on a five point scale. This suggests that e-business is not yet vital to achieving organizational objectives. While e-business may be included in the organization's toolkit, other initiatives may be relatively more important. Thus, we conclude that e-business is still in an experimental stage and not a key part of SMFOEs' competitive strategy.

SMFOEs constitute the vast majority of businesses, and many countries and government agencies and policy makers like the SBA (Small Business Administration) are actively involved in supporting and regulating them. Such government intervention was found to be crucial for SMEs (Scupola 2003). The findings of this paper can help such agencies shape their short- and long-term

Table 9. Summary of the hypotheses testing

Characteristic	*Significance*
H1: Business strategy	***
H2: Firm age	**
H3: Firm size (Revenue)	*
H4: Industry	**
H5: Market scope	*
H6: CEO Age	NS
H7: CEO Education	***
H8: CEO Leadership style	NS

NS: Not Significant; *: significant <0.10; **: significant <0.05; ***: significant <0.01

strategies. In the short term, strategies should focus on helping SMFOEs realize the benefits related to Marketing, the strongest motivator. Additionally, given that certain characteristics (e.g., CEO education and business strategy) are likely to lead to stronger motivations, firms with these characteristics may be the ideal target for such agencies. In the long run, firms must go beyond the current focus on Marketing as the primary motivator. To fully realize the benefits of e-business, firms must be motivated to pursue other aspects of e-business (e.g., e-Profitability). Government agencies can play an important role in guiding firms towards other uses of e-business.

Recently, several attempts have been made to assess national e-business readiness (Harvard University's International Development Center (E-readiness 2004), McConnell International (McConnell 2001) and Jutla *et al.* (2002)). Each proposes a number of indicators grouped into categories such as learning indicators, society indicators, economy indicators, technology infrastructure, human infrastructure, e-business climate. None include firm level indicators in their guides. Our study suggests that there are key firm-level indicators (Business Strategy, CEO education, Industry and Firm age) that may enhance the measurement of e-business readiness.

There are important implications for service providers as well. SMFOEs constitute the majority of the businesses in numerous countries, and consequently represent an important market segment for the technology-related service providers. Brown and Lockett (2004) argue that SMEs have focused primarily on simple applications and that for SMEs to adopt more sophisticated applications, service providers must play a critical role. They further suggest that service providers' understanding of the nature of SMEs is limited. This study can help service providers better understand the motivations and factors that influence these motivations thereby enabling them to better assist this market. Service providers can segment the SMFOE market based upon firm characteristics and target those segments whose characteristics indicate that they are likely to be adopters of e-business, such as Innovator firms, younger firms, those with highly educated CEOs and those within the service industry. Each of these segments requires a different positioning strategy. For example, Innovators are more inclined towards marketing and e-profitability related technology, whereas younger firms and those with highly educated CEOs would be only be concerned with marketing related e-business technology.

This study is limited to small family owned businesses in the United States. While this represents a large proportion of organizations in the US, the results are nonetheless not generalizable beyond this population. Further, the lower response rate and our investigation of the respondents vs. non-respondents suggest that the respondents were those who had implemented e-business applications. However, in many ways, an investigation of the non-motivating factors could be very interesting. Since our focus was only on factors that motivate SMFOEs to adopt e-business applications, the present study did not capture the responses of those who had an interest in, but have not yet implemented e-business applications, which represents an area for future research.

Since this research focused primarily on characteristics of SMFOEs and their e-business motivations, it did not address any relationships between e-business motivations and actual adoption of e-business applications. Thus, this represents another fruitful area for research.

Note

1. Rational behaviour would suggest that before investing in e-business, a firm must perceive substantial benefits; otherwise, they will not go online.

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