Applying Importance-Performance Analysis to Evaluate E-Business Strategies among Small Firms[1]

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ABSTRACT

Contrary to early predictions, the evidence suggests that e-business has had limited impact on small organizations. One of the key reasons is a lack of understanding of these firms' motivations for engaging in e-business. Given that the vast majority of businesses are defined as small, it is important to understand what drives these firms to engage in e-business. Importance-Performance analysis (IPA) offers a simple, yet useful method for simultaneously considering both the importance and performance dimensions when evaluating or defining strategy. This technique has been successfully used in a variety of settings to define priorities and guide resource allocation decisions. This study uses IPA to evaluate e-business strategies among small organizations and to make resource allocation recommendations. The results indicate that customer-focused motivations are most important in adopting e-business; improving profitability is least important. Moreover, the results indicate that small organizations, while recognizing the potential for more sophisticated uses, are in the early stages of implementing e-business.

Keywords: *e-business, e-commerce, importance-performance maps, family business, SME*

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INTRODUCTION

The late 1990's marked the coming of age of the Internet as a commercial medium (Roberts, 2003; Reedy and Schullo, 2004). Early observers forecasted that it would enable small businesses to "level the playing field" when competing with larger firms (e.g., Wilder et al., 1997; Hsieh and Lin, 1998). By supporting all parts of an organization's value chain, including promotion, procurement, production, recruiting, and so on, e-business technologies would enable small firms to cost-effectively extend market scope (Hamill and Gregory, 1997; Wilder et al., 1997), build name recognition, transform the supply chain (Rayport and Sviokla, 1995), and track customer tastes and preferences (Haynes et al., 1998). While some small firms have achieved strong growth through leveraging e-business technologies (Strauss et al., 2003), others have been guarded and slower to adopt these new technologies (Thong, 1999; Boyer and Olson, 2002; Zank and Vokurka, 2003; Grandon and Pearson, 2004). Consequently, in contrast to early predictions, several researchers have concluded that the firms benefiting the most from e-business have been larger, rather than smaller, organizations (Auger and Gallaugher, 1997; Griffith and Krampf, 1998; Haynes et al., 1998; Poon and Swatman, 1999; Hart et al., 2000; Jeffcoate et al., 2002).

Many reasons exist for this lag in adoption, including inferior availability of financial and human resources (Davies and Garcia-Sierra, 1999; Barnes et al., 2003; Vlosky and Smith, 2003), and failure to see the benefits of engaging in e-business (Vlosky and Smith, 2003), which has been confirmed in up to two-thirds of non-adopters (Pratt, 2002). Implementing e-business applications without fully understanding the value makes it a risky investment. This is especially relevant for family owned firms, the vast majority of U.S. small businesses, since they are often characterized as fiscally conservative and risk-averse (Gudmundson et al., 1999; Donckels and Frohlich, 1991; Ward, 1977). E-business investment may simply present a greater risk than they are accustomed to taking. Thus, the reluctance among small firms to engage in e-business suggests the need for greater clarity and understanding concerning the appropriate and realistically achievable role for e-business in these firms.

Additionally, complications arise when small firms feel pressured to "get connected." Recent work finds pressure to adopt Internet technologies coming from both external sources (e.g., trading partners) (Grossman, 2004; Soliman and Janz, 2004) and internal ones. In particular, the fear of being left behind and at a comparative disadvantage with respect to competitors has been identified by researchers (e.g., Barnes et al., 2003) as a salient driver of e-business investment. Under these circumstances of implementation, performance suffers. This occurs due to the absence of a clearly articulated strategic logic for e-business investments (Barnes et al., 2003) and further suggests the need for a better understanding of the role of e-business in small firms. Thus, while e-business offers tre-

mendous potential, there is a need for small organizations to better understand how to leverage this technology.

Within the academic literature, few studies have focused on the business goals that small firms hope to achieve by engaging in e-business. While several recent studies have focused on the realized benefits of e-business, yielding valuable information about potential e-business opportunities (e.g., Pflughoeft et al., 2003; Zhuang and Lederer, 2003), there is a scarcity of research focused on understanding the motivations, or the anticipated benefits. Given the potential value of e-business to organizations and given that small firms represent the vast majority of businesses worldwide (Kuratko and Hodgetts, 2001), this paucity remains surprising. Understanding why firms, especially small ones, engage in e-business is an important step in understanding how to match the plethora of e-business applications with appropriate strategy. This can enable firms to more effectively select, use, and monitor e-business investments over time (Auger and Gallaugher, 1997; Raymond, 2001) and can help small firms to maximize scarce resources (Auger et al., 2003).

The purpose of this study is to demonstrate the value of importance-performance analysis (IPA) as a tool to: (1) assess e-businesses strategy based on underlying motivations (i.e., anticipated benefits); and (2) to make resource allocation recommendations. Importance-performance analysis has been used in a variety of settings for similar reasons. For example, Skok et al. (2001) used IPA to analyze the success of investments in information systems in the health club industry; O'Neill et al. (2001) applied IPA to evaluate service quality perceptions of online library services. By offering insight on the potential role of e-business and guidance regarding resource allocation decisions, IPA can be a useful tool for organizations struggling with the questions of why and how they should engage in e-business.

THEORETICAL FOUNDATION

We first review the literature on importance-performance analysis. Next, the literature on e-business motivations is reviewed. Based on this review, nineteen specific motivations for engaging in e-business are identified.

Importance-Performance Analysis

Importance-performance analysis was introduced by Martilla and James (1977) as a framework for understanding customer satisfaction as a function of both expectations related to salient attributes ("importance") and judgments about their performance ("performance"). While each yields valuable information independently, the full potential and promise of this type of information are more likely to be realized when the two concepts are merged (Martilla and James, 1977; Shaw et al., 2002; Graf et al., 1992). By identifying attributes that should be emphasized or de-emphasized, IPA guides the prior-

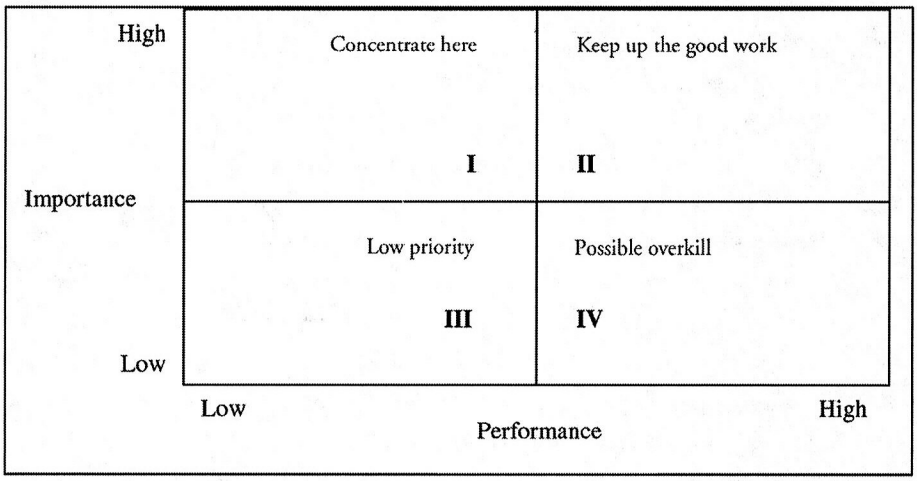

Figure 1: IP concept map (Martilla and James, 1997)

itization and development of action plans to minimize mismatches between importance and performance (Graf et al., 1992; Skok et al., 2001), resulting in improved operational efficiencies through resource redeployment recommendations (Graf et al., 1992; Slack, 1994). Importance-performance analysis begins with identifying the critical elements to be evaluated (Martilla and James, 1977; Graf et al., 1992; Duke and Mount, 1996; Skok et al., 2001). Typically, this list is based on a thorough literature review or qualitative research (Martilla and James, 1977; Skok et al., 2001). In our study, the critical elements are small firms' motivations for engaging in e-business (subsequently discussed). Next, a survey instrument is developed to collect importance and performance ratings on each element from the sample, often using Likert or numerical scales (Skok et al., 2001).

The literature pertaining to the simultaneous consideration of importance and performance has followed two methodological streams—gap analysis and IP maps. Gap analysis focuses on identifying performance gaps, which are typically measured as performance minus importance (O'Neill et al., 2001; Skok et al., 2001; Shaw et al., 2002). Using gap analysis, O'Neill et al. (2001) identified underperformance (negative scores) on 16 of 18 attributes of online services offered by a university library. Similarly, Shaw et al. (2002) applied gap analysis to measure service quality of IS/IT systems. While Shaw et al. (2002) concluded that gap analysis is rigorously grounded and can be appropriately used in an IS context, others have criticized this method due to theoretical shortcomings (e.g., Bacon, 2003).

The second approach, importance-performance (IP) maps, involves plotting the mean ratings for importance and performance on a two-dimensional grid to produce a four-quadrant matrix that identifies areas needing improvement as well as areas of effec-

tive performance (Graf et al., 1992, Skok et al., 2001)[2] As shown in Figure 1, quadrant I (High Importance/Low Performance) is labeled "Concentrate here." Elements located in this quadrant represent key challenges that require immediate corrective action and should be given top priority (Graf et al., 1992). Quadrant II (High Importance/High Performance) is labeled "Keep up the good work," contains elements that are strengths to the organization, and calls for a maintenance posture (Graf et al., 1992). If elements positioned in quadrant III (Low Importance/Low Performance) do not represent a threat to the organization (Barsky and Labagh, 1992), they may be candidates for discontinuation of resources/effort (Crompton and Duray, 1985). This quadrant is labeled "Low priority." Quadrant IV (Low Importance/High Performance), labeled as "Possible overkill," contains elements that are insignificant strengths to the organization and suggest areas from which resources could be diverted elsewhere.

An extension of the quadrant approach inserts an upward sloping, 45° line to distinguish regions of differing priorities. This is termed the iso-rating or iso-priority line, where importance equals performance. Skok et al. (2001) define the area above the line as the region of opportunities and suggest that large distances (gaps) identify areas of priority. Slack (1994) uses this line to identify the lower bound of acceptability, with items above the line requiring improvement. Bacon (2003) contends that all points on the line have the same priority for improvement and that points above the line represent high priorities for improvement. Thus, the iso-rating line, where performance equals importance, represents optimal points on the IP map. Since everything depends on how the attributes are positioned on the grid, placement of the axes—a matter of judgment according to Martilla and James (1977)—is critical (Crompton and Duray, 1985). The axes can be placed based on any number of methods (e.g., median values [Crompton and Duray, 1985], scale midpoints [Skok et al., 2001], and weighted mean for importance [Dolinsky, 1994]), however placement based on means is most often used (Martilla and James, 1977; Crompton and Duray, 1985; Graf et al., 1992; Weber, 2000; O'Neill et al., 2001).

The literature reveals numerous demonstrations of the usefulness of IPA. It has been used as a tool for developing and evaluating customer service and marketing strategy (Martilla and James, 1977; Crompton and Duray, 1985; Sampson and Showalter, 1999), operations strategy (Slack, 1994), computer and IS/IT operations (O'Neill et al., 2001; Skok et al., 2001), assessing human resource management policies and strategies (Graf et al., 1992), and better allocating organizational resources (Graf et al., 1992; Slack, 1994; Lovelock et al. (1998) in O'Neill et al., 2001). Importance-performance analysis has also been applied in numerous environments, e.g., the automotive industry (Martilla

2. Performance is typically plotted along the x-axis and importance along the y-axis. The point coordinates for each element determine their placements on the grid.

and James, 1977), health clubs (Skok et al., 2001), hospitality/tourism (Weber, 2000), banking (Yeo, 2003), education (Roskowski, 2003), food services (Sampson and Showalter, 1999), and online library services (O'Neill et al., 2001). In addition, IPA has been used to examine differences in perspectives among subsets of an organization's markets (Swinyard, 1980; Shaw et al., 2002) and constituents (Chapman, 1993; Skok et al., 2001). As noted by Skok et al. (2001), the significance and reliability of importance-performance analysis has been widely tested.

Prior researchers have noted that the simplicity, flexibility, and visual approach to analysis provided by IP mapping make it a useful tool to support common management decisions (Duke and Mount, 1996; Bacon, 2003). IP maps can assist managers in determining resource allocations, since attributes that should be emphasized or de-emphasized are identified by their placements (Graf et al., 1992; Slack, 1994). In doing so, mismatches between importance and performance are minimized (Graf et al., 1992; Skok et al., 2001), resulting in improved deployment of organizational resources (Graf et al., 1992; Slack, 1994). Hence, IPA, and more specifically IP maps, furnish business managers with an effective tool to guide the prioritization and allocation of resources.

E-Business Motivations

Motivations are anticipated benefits and are distinct from realized benefits. Anticipated benefits motivate firms to implement certain e-business applications, which result in realized benefits. Realized benefits may or may not be the same as those that motivated the firms. For example, a firm may implement applications to facilitate online sales, anticipating increased sales. The actual benefits realized may include reduced transaction costs and increased customer satisfaction.

Recent work can be categorized according to three streams of literature: (1) small firms' reported motivations for engaging in e-business; (2) theoretical / conceptual benefits of adopting e-business; and (3) the benefits of e-business as reported in research study findings. To date, only a few studies have attempted to identify small firms' motivations for engaging in e-business (i.e., Access Markets, 2001; Berrill et al., 2004; Downie, 2003). On the other hand, theoretical / conceptual benefits associated with adopting e-business (research stream #2) have been 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 not empirically validated. On the other hand, research stream #3 has

focused on e-business benefits, as identified in empirical studies (e.g., Levenburg et al., 2002; Poon and Swatman, 1997; Pratt 2002; Zhuang and Lederer, 2003).

Gleaned from these three streams of literature, e-business motivations are discussed below. First, at the business strategy level, technological innovation and strategic use of the Internet have been frequently cited as means for achieving competitive advantage (Geiger and Martin, 1999; Hadjimanolis, 2000; Lederer et. al, 2001; Levenburg and Dandridge, 2000; Zank and Vokurka, 2003). Thus, one possible motivation for engaging in e-business is *to gain a competitive advantage.*

Marketing-related motivations as suggested in the three streams of literature include firms' desires to: *increase sales* (Access Markets, 2001; Griffith and Krampf, 1998; Levenburg et al., 2002; Pratt, 2002); *accomplish advertising, promotion, and public relations* (Access Markets, 2001; Evans, 2001); *enhance the firm's image* (Stephenson et al., 2003); *improve customer satisfaction* (Chordas, 2001); and *improve customer retention* (Zank and Vokurka, 2003). As one example, Pratt (2002) found that e-business is implemented to attract new customers, both domestically and abroad, and new types of customers.

Several researchers have indicated that the desire to *develop and strengthen relationships with key constituents* (e.g., suppliers and customers) might serve as an e-business driver (Access Markets, 2001; Barua et al., 2001; Chordas, 2001; Zank and Vokurka, 2003). As one example, Zank and Vokurka (2003) found a significant difference between manufacturers' and customers' perceptions of the impact of e-business on their relationships, with higher assessments of improved relationships among manufacturers, possibly as a result of more direct relationships.

The goal to *improve financial performance* represents yet another e-business driver for small firms. This e-business goal can be been identified in terms of several perceived e-business results: reduced accounts receivable (Zank and Vokurka, 2003); reduced transaction costs (Surjadjaja et al., 2003); reduced costs of sales and delivery fulfillment (Access Markets, 2001); reduced direct or administrative costs (Levenburg et al., 2002); reduced inventory (Zank and Vokurka, 2003); across-the-board cost reductions (Chordas, 2001; Pratt, 2002); and increased profits (Levenburg et al., 2002; Pratt, 2002).

Finally, small firms are motivated to venture online to *obtain information* (Levenburg and Dandridge, 2000; Access Markets, 2001; Pratt, 2002; Pflughoeft et al., 2004). For example, Levenburg and Dandridge (2000) found that the most common purpose for which very small firms used the Internet was to obtain information, leading them to suggest that these firms may place a greater priority on using the Internet to gain supply chain sourcing information, and for "buying" reasons rather than for "selling" reasons. More recently, Plughoeft et al. (2004, p. 474) suggest, "Given the lack of resources to allocate specifically for environmental intelligence, the Web could be the single most important source for small firms to keep abreast of their marketing environments."

DATA COLLECTION

This study is based on survey data collected using a questionnaire that was designed to gain insight into e-business motivations and practices among small, family-owned businesses. This sector of the economy was selected since recent work indicates that small firms, of which family-owned businesses are predominant, are failing at a rapid rate (Upton et al., 2001a). For these firms, increasing competitiveness vis-à-vis engaging in e-business might well hold the key to improving business performance and increasing viability in the marketplace.

The questionnaire included the nineteen specific e-business motivations gleaned 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. In addition, they were asked to indicate, on another five-point Likert-type scale, how satisfied they were with the results obtained. Demographic information was also collected (e.g., industry, annual revenues, market scope). The questionnaire was pre-tested and was improved and revised based on the results of the pre-testing.

The sampling frame used was a purchased list of subscribers to *Family Business* magazine. This sampling frame was selected since no national list of family-owned firms exists. According to Burns and Bush (2003, p. 336), "Sometimes the only available sample frame contains much potential sample frame error, but it is used due to the lack of any other sample frame. It is the researcher's responsibility to seek out a sample frame with the least amount of error at a reasonable cost." While we recognize the presence of sample frame error since (a) not all family businesses subscribe to the publication; and (b) not all subscribers are family businesses (e.g., they could be family business consultants), this sample frame was judged to be the best available.

Nine thousand three hundred sixty-five (9,365) surveys were mailed to family-owned businesses across the United States. Four hundred thirty-nine (439) questionnaires were completed and returned, representing a response rate of 4.7%. Although the absolute number of responses was judged to be adequate (and significantly higher than obtained in other studies focused on this segment of the population), the sample frame error discussed previously may have contributed to the low response rate. A sampling of the non-respondents (1,262) was conducted to determine reasons for non-participation. While 191 (15.5%) of non-respondents were determined to be no longer in existence, the follow-up contact yielded an additional 62 responses. Thus, excluding 15.5% of all the surveys sent (defunct businesses), the response rate is 5.5%, similar to response rates obtained in other recent studies focused on e-business in small firms (e.g., Grandon and Pearson, 2004; Pflughoeft et al., 2004).

Responses from early and late responders were compared using t-tests and no significant differences were found between them. This suggests a low likelihood of non-response

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			

bias. However, the data were analyzed 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 (Table 1). Arguably, very small businesses may be 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 and may not engage in e-business activities.

RESULTS

The nineteen motivations were analyzed to identify the underlying factors. A principal components analysis using a varimax rotation identified four factors with eigenvalues greater than one. The results of this analysis are displayed in Table 2. The four factors were labeled Marketing, Communication, e-Profitability, and Research. The questions were evaluated for reliability and validity. 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. 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. Table 3 presents correlations among the nineteen motivation items. All correlations were significant at alpha = 0.0001. For the Marketing factor, 14 of 15 correlations are greater than 0.4; for Communication, all six are greater than 0.4; for e-Profitability, 14 of 15 are greater than 0.4; and for Research, all three are greater than 0.4. This is evidence of convergent validity.

Table 2: 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			
	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%

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 it is determined by counting the number of times a measure has a higher correlation with a measure from another factor than with measures in its own factor. Only 38 of 281 correlations used to evaluate discriminant validity were higher, providing evidence of discriminant validity.

Table 3: Correlations among motivation variables

	IMP1	IMP2	IMP3	IMP4	IMP5	IMP6	IMP7	IMP8	IMP9	IMP10	IMP11	IMP12	IMP13	IMP14	IMP15	IMP16	IMP17	IMP18	IMP19
IMP1	1.00	0.73	0.48	0.46	0.50	0.38	0.18	0.16	0.17	0.30	0.39	0.15	0.19	0.25	0.19	0.08	0.37	0.34	0.45
IMP2		1.00	0.56	0.54	0.51	0.47	0.15	0.22	0.10	0.35	0.44	0.22	0.25	0.20	0.17	0.13	0.40	0.36	0.45
IMP3			1.00	0.70	0.51	0.38	0.19	0.25	0.22	0.49	0.48	0.25	0.29	0.27	0.32	0.26	0.36	0.48	0.33
IMP4				1.00	0.55	0.43	0.26	0.31	0.26	0.47	0.54	0.27	0.35	0.27	0.31	0.32	0.47	0.52	0.42
IMP5					1.00	0.44	0.22	0.22	0.23	0.42	0.38	0.15	0.37	0.39	0.42	0.30	0.43	0.48	0.53
IMP6						1.00	0.51	0.48	0.47	0.35	0.42	0.31	0.35	0.37	0.33	0.33	0.36	0.35	0.61
IMP7							1.00	0.59	0.57	0.18	0.32	0.35	0.25	0.33	0.32	0.42	0.22	0.22	0.35
IMP8								1.00	0.41	0.21	0.36	0.40	0.38	0.47	0.39	0.49	0.26	0.31	0.33
IMP9									1.00	0.36	0.30	0.28	0.34	0.39	0.33	0.41	0.24	0.23	0.38
IMP10										1.00	0.40	0.20	0.30	0.46	0.38	0.49	0.50	0.50	0.42
IMP11											1.00	0.48	0.49	0.33	0.33	0.29	0.41	0.45	0.40
IMP12												1.00	0.62	0.33	0.31	0.30	0.28	0.26	0.25
IMP13													1.00	0.39	0.33	0.33	0.36	0.36	0.31
IMP14														1.00	0.65	0.52	0.47	0.56	0.49
IMP15															1.00	0.58	0.51	0.44	0.42
IMP16																1.00	0.41	0.29	0.34
IMP17																	1.00	0.57	0.46
IMP18																		1.00	0.50
IMP19																			1.00

Gap Analysis

Table 4 shows the mean importance and performance (satisfaction) ratings of the nineteen motivations. The overall mean importance rating is 3.18 and the satisfaction rating is 3.21. Looking only at the importance scale, one would conclude that resources should be focused on those areas deemed important. For our sample, these are motivations 1, 2, 4, 6, and 19 (highlighted in Table 4), all of which are customer focused. Looking only at the performance scale, one would conclude that resources should be focused on those areas that are in need of improvement. For our sample, these are motivations 9, 10, 15, 16, and 18 (highlighted in Table 4). These deal with selling online, reducing costs and increasing profits, and meeting the needs of large trading partners. Thus, the two scales lead to very different conclusions.

Table 4 also shows the performance gaps (performance minus importance) and t-test statistics, to determine if the gaps are non-zero, for the individual motivations. Only three of the 19 individual gaps were not significant. The largest gaps are for motivations 2, 4, 8, 15 and 16 (highlighted in Table 4). These focus on certain aspects of marketing, cost reduction, and communication with employees, and are different from those identified when only importance or satisfaction are considered. In some cases the gap is negative, that is, performance is less than importance, while in some cases the gap is positive. Overall, eight of the areas have a negative gap and eight have a positive gap. The significance of the direction of the gap will be discussed later when the concept of iso-rating lines is discussed.

Table 5 provides mean importance and satisfaction ratings and gaps for the four factors identified above. At this level, three of the four gaps are significant. No gap exists for the Communication factor. The largest significant gap is for Marketing, with the negative sign indicating underperformance. The gaps for Profitability and Research are smaller and positive, indicating that performance exceeds importance. It is interesting to note that while Marketing has the largest negative gap, this factor also has the highest rating for both importance and performance; and while Profitability has the largest positive gap, this factor has the lowest ratings for importance and satisfaction. Such seeming inconsistencies are also apparent when considering the individual motivations (Table 4), where motivations with large negative gaps have higher importance and performance ratings than motivations with large positive gaps. IP maps provide a way to visualize this data and may help explain this seeming inconsistency.

The above analysis supports the argument that, while it is necessary to identify areas of importance and low performance, neither by itself is sufficient. Just because an area is important does not mean that resources should be expended in that area; performance may be adequate, in which case the benefits of the resources expended will be limited. Similarly, focusing only on areas of low performance may be of little value, if these areas are not important. This corroborates the argument made in prior studies (Martilla

Table 4: Mean importance and satisfaction rating and gap (individual motivations)

	Motivation (individual)	Mean Imp.	Mean Sat.	Gap (S-I)	Pr > |t|
1	Enhance company image/brand	4.04	3.57	-0.47	<.0001
2	Distribute product/company information	4.12	3.53	-0.59	<.0001
3	Identify new markets or customers	3.56	3.12	-0.44	<.0001
4	Generate sales leads	3.76	3.06	-0.70	<.0001
5	Gain an edge over competition	3.64	3.26	-0.38	<.0001
6	Improve communications with customers	3.95	3.64	-0.31	<.0001
7	Improve communications with channel partners	2.76	3.19	0.43	<.0001
8	Improve communications with employees	2.50	3.10	0.60	<.0001
9	Comply with requirements of a large customer or supplier	2.64	2.20	0.56	<.0001
10	Sell products online	2.74	2.85	0.11	0.3614
11	Improve marketing intelligence	3.11	3.15	0.04	0.6538
12	Find information about new sources of supply	3.13	3.36	0.23	0.0026
13	Find information on industry or other economic data	3.27	3.44	0.17	0.0305
14	Reduce administrative costs	2.73	3.07	0.35	<.0001
15	Reduce direct costs of creating product or service	3.39	3.00	0.61	<.0001
16	Reduce shipping costs	1.99	2.89	0.90	<.0001
17	Reduce advertising expenses for traditional media	2.84	3.02	0.18	0.055
18	Increase net profit	3.42	3.00	-0.43	0.0002
19	Provide or improve customer support	3.88	3.53	-0.35	<.0001
	Overall	3.18	3.21	0.03	0.5798

and James, 1977; Shaw et al., 2002; Graf et al., 1992) that both importance and performance must be considered simultaneously.

IP Maps

The IP map for the complete set of data is provided in Figure 2. First, consider the four quadrants. Most of the individual motivations fall in quadrants II (keep up the good work) and III (low priority), with just a few in quadrant I (concentrate here). The motivations in quadrant II are mostly customer focused and require relatively simple e-business applications to achieve high levels of performance. For instance, establishing a simple Web site providing company and product information and the use of e-mail may be all that is needed to achieve good results. The motivations in quadrant III are mostly related to selling online, reducing costs, and communicating with various stakeholders.

Table 5: Mean importance and satisfaction rating and gap (factors)

	Motivation (Factors)	Imp.	Sat.	Gap	Pr > |t|
	Marketing	3.83	3.35	-0.49	<.0001
	e-Profitability	2.69	2.97	0.29	<.0001
	Communication	3.19	3.26	0.06	0.2948
	Research	3.17	3.31	0.15	0.0206
	Overall	3.18	3.21	0.03	0.5798

The placement of these areas in the low priority quadrant may imply that the use of e-business to further these aspects of the organization is simply not a key element of the overall business strategy. These areas may become more important as the organization progresses into later phases of e-business evolution. The motivations in quadrant I relate to expanding markets and improving profitability. These may require more sophisticated applications and greater level of integration with existing business processes than the firms are willing or able to implement, thereby leading to lower levels of performance. The presence of only one motivation in quadrant IV, and indeed an overall assessment of

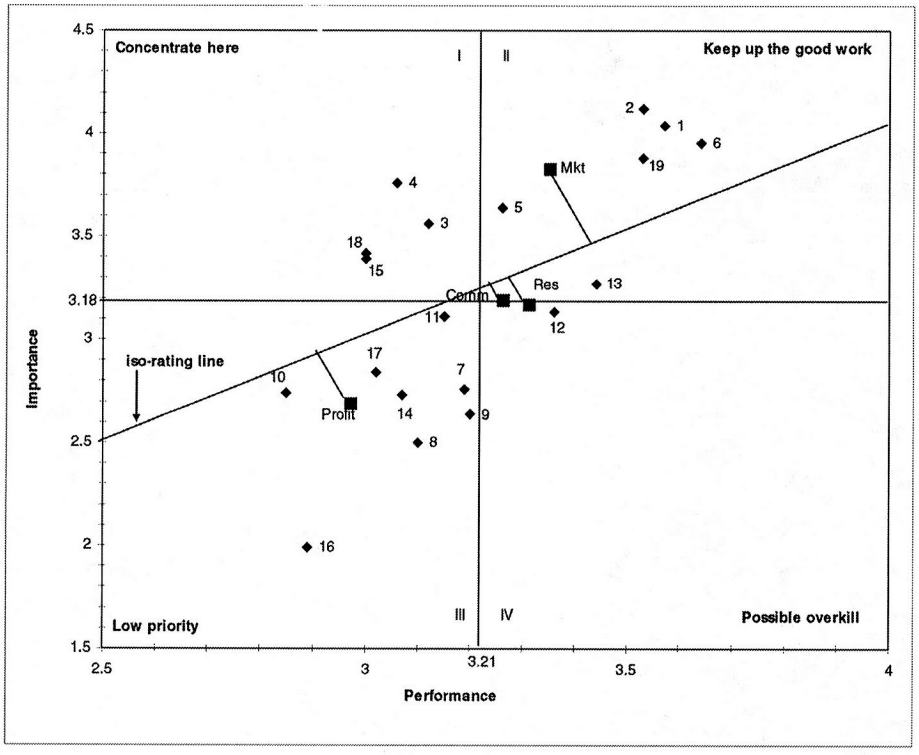

Figure 2: IP map

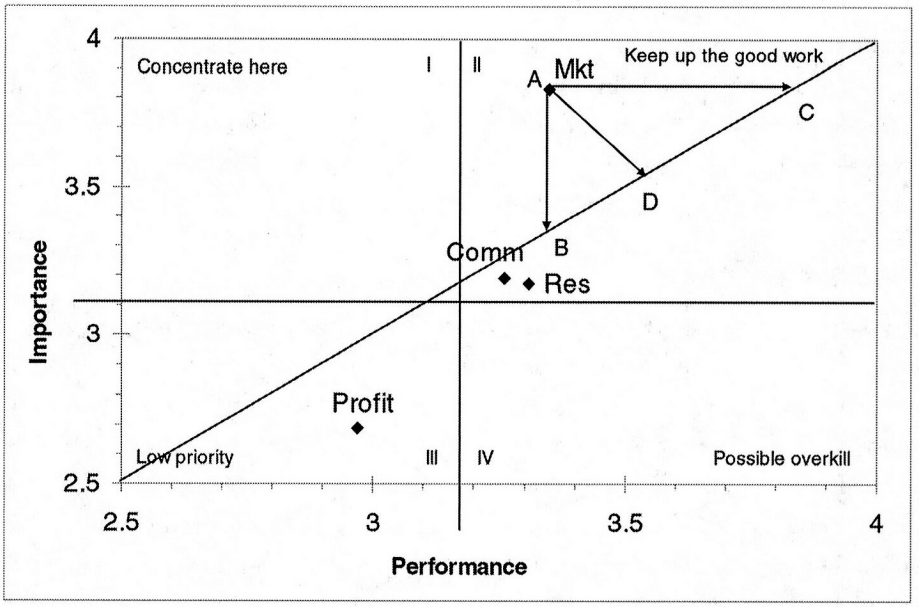

Figure 3: Paths to the iso-rating line

the II· map suggest that the firms in the sample are very cautious with their adoption of e-business.

The four quadrants of the IP map provide an overview. Figure 2 also shows an iso-rating line, where performance equals importance (the line is not a diagonal in Figure 2 because of different scales for the two axes). The distance from the iso-rating line is the gap identified in Tables 4 and 5.

Focusing only on the four factors, the gaps for Communication and Research are small, and there may not be much to gain by moving these points closer to the optimal iso-rating line (i.e., reducing the gaps). The gaps for Marketing and Profitability are the largest, but in opposite directions, and moving these points towards the iso-rating line may be of significant value. What is less apparent is the path from their present location to the line. Three choices exist. For Marketing, the choices are to increase performance, to move the point horizontally to the right; decrease importance to move the point vertically towards the line; and simultaneously change both importance and performance to move the point directly toward the line. These choices are shown in Figure 3 as lines A-C, A-B and A-D, respectively. Similar choices are available for Profitability. Decreasing the importance of Marketing implies that the role of e-business in this area should be de-emphasized, possibly by increasing the importance of alternative means of Marketing. This would result in a movement shown by line A-B. Increasing performance implies increasing the resources allocated to e-business applications aimed at Marketing, possibly by moving resources from other methods of marketing or from items in quadrant III.

This would result in a movement shown by line A-C. These two choices assume that importance and performance are independent. However, there is evidence that there is an inverse relationship between importance and performance (Roszkowski, 2003; Sampson and Showalter, 1999). That is, a change in performance will lead to a change in importance, resulting in a diagonal move towards the iso-rating line. This is depicted by line A-D in Figure 3 and is the recommended path.

CONCLUSIONS

The purpose of this paper was to demonstrate the value of IP analysis in evaluating e-business strategy and to make recommendations regarding priorities and resource allocation. The results offer initial support for the use of IP maps, particularly for small firms without resources or expertise needed for more sophisticated analytic tools.

For the firms in our sample, it appears that the current e-business strategy is a cautious one and is motivated by business drivers with a decided customer focus, and requiring the implementation of simple e-business applications. The firms do recognize the potential value of e-business in other areas, however, as evidenced by the few items in the "concentrate here" quadrant. It is recommended that these firms reallocate their resources to move items from quadrant I to II, while simultaneously moving all items closer to the iso-rating line. On the other hand, engaging in e-business in order to improve profitability seems to be a low priority/low performance item.

Additionally, further analysis would be warranted if a new motivation was introduced, as this might reposition perceptions regarding the importance of all motivations. New technologies are always on the horizon. Since the availability of these technologies would introduce new possibilities for e-business strategy, importance-performance analysis must be viewed on a dynamic, rather than static, basis.

Further research is necessary to evaluate this tool in different contexts and for different uses. For example, it is possible to apply IP maps to individual firms to make more specific recommendations (Skok, et. al., 2001); to compare firms and their competitors or industry (Burns, 1986; Yeo, 2003, Slack 1994; Skok, et. al. 2001; Dolinsky and Caputo, 1991); and to evaluate the effectiveness of specific changes and interventions over time (Sampson and Showalter, 1999; Duke and Mount, 1996).

One limitation of this study is that it analyzes e-business strategy from the perspective of small business owners/CEOs and not customers or users. Prior to decision making regarding realignment of resources, however, it would be prudent to obtain perspectives of customers, users, and other stakeholder groups since they may differ from business owners'. The same methodology as used in this study (i.e., IPA) could be used to glean insights from these segments. Additionally, while this study analyzed e-business motivations among small family-owned firms (which represent the vast majority of U.S. small businesses), no attempt was made to account for the influences of demographic variables,

such as the size of the firm, industry sector, or market scope. This suggests the need for additional research to explore nuances associated with salient characteristics of smaller firms. Finally, in focusing on small family-owned firms in this study, the results should be extended to other types of organization with caution. Replicating this type of study in other organizational contexts is appropriate.

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