



Using importance performance analysis to understand and guide e-business decision making in SMEs

Importance
performance
analysis

137

Simha R. Magal, Parag Kosalge and Nancy M. Levenburg

*Department of Management, Seidman College of Business,
Grand Valley State University, Grand Rapids, Michigan, USA*

Abstract

Purpose – E-business adoption among small and medium-sized enterprises (SMEs) has been limited because of resource constraints and a failure to understand the strategic value of e-business. To facilitate decision making concerning e-business applications and their implementation, simple, low cost tools are needed to assist in analyzing and developing effective e-business strategies. This paper aims to evaluate the use of e-business applications among SMEs, to test the robustness of importance-performance (IP) analysis models and to present IP mapping as a resource/tool for decision making.

Design/methodology/approach – A total of 19 e-business motivations were identified from the literature and incorporated into a self-administered survey questionnaire. Data were collected from 439 SMEs located throughout the US.

Findings – Most IP studies have assumed that importance and performance are independent; however, three recent studies have argued otherwise, identifying positive, negative and v-shaped relationships. The study finds a fourth, N-shaped relationship between importance and performance. This is an extension of the v-shaped relationship and appears when the full range of performance scale values is displayed.

Research limitations/implications – The relationship between the “importance” and “performance” variables suggests a path of travel that can help show the e-business adoption states and the possible undulations in e-business strategies along the path. Firms can identify their location on an IP map relative to the N-shaped path and then identify the path to the optimum location on the map.

Originality/value – This paper should be useful for academic researchers and business practitioners seeking guidance in terms of which e-business applications to adopt and implement.

Keywords Electronic commerce, Small to medium-sized enterprises, Management strategy, Business analysis

Paper type Research paper

1. Introduction

The commercialization of the internet in the mid-1990s led to predictions that this new technology would be of immense value to small and medium-sized enterprises (SMEs) and help them “level the playing field” against their larger counterparts. The argument was that the ubiquitous nature of this technology would allow SMEs to deploy e-business applications to support all aspects of their operations, enabling them to more effectively compete with larger organizations. For example, by implementing



Journal of Enterprise Information
Management
Vol. 22 No. 1/2, 2009
pp. 137-151

© Emerald Group Publishing Limited
1741-0398
DOI 10.1108/17410390910932795

The authors are grateful to the Family Owned Business Institute at Grand Valley State University for funding our research.

e-business applications, SMEs could cost effectively extend market scope (Hamill and Gregory, 1997; Wilder *et al.*, 1997), build name recognition, transform their supply chains (Rayport and Sviokla, 1995), and track customers' tastes and preferences (Haynes *et al.*, 1998). These potential benefits were expected to be the motivating characteristics of e-business that would spur e-business adoption among SMEs. However, e-business adoption by SMEs has been limited (Thong, 1999; Grandon and Pearson, 2004; Johnston *et al.*, 2007). Researchers have concluded that the primary beneficiaries of the e-business revolution are larger, rather than smaller firms (Haynes *et al.*, 1998; Jeffcoate *et al.*, 2002).

One reason offered for the limited use of e-business by SMEs is the lack of adequate financial and human resources (Barnes *et al.*, 2003; Vlosky and Smith, 2003; Eikebrokk and Olsen, 2007). Investment in e-commerce/e-business information technologies is perceived by many smaller firms as a costly – and risky – undertaking (Wymer and Regan, 2005). Understanding and defining the role of e-business in an organization, and then planning and implementing the needed applications can be resource intensive. Lacking such resources, SMEs may be unable to judiciously select and implement needed applications, let alone understand their potential benefits (i.e. motivators) of e-business (Johnston *et al.*, 2007). Indeed the failure to see the benefits of e-business has been suggested as a major reason for the limited use of e-business by SMEs (Pratt, 2002; Vlosky and Smith, 2003).

Meanwhile, amidst increasingly competitive markets worldwide, the need for small businesses to adopt e-business simply to survive is becoming more critical (Chong and Pervan, 2007). Firms are under pressure to “do something” with e-business lest they be left behind. These pressures can come from internal or external (e.g. trading partners) sources (Wymer and Regan, 2005; Beckinsale *et al.*, 2006) and have been identified as important reasons for e-business investment (Barnes *et al.*, 2003; Chong and Pervan, 2007). SMEs may be expending their limited resources to implement applications without fully understanding their strategic role within their organizations (Chong and Pervan, 2007; Eikebrokk and Olsen, 2007). As a result, the potential for mismatch between e-business goals and deployment of applications is high, calling for the development of simple, low cost tools to help SMEs develop more effective approaches to e-business planning.

Importance-performance (IP) analysis, first introduced by Martilla and James (1977), is a simple, graphical technique widely used to evaluate strategy and make resource allocation recommendations for improvement (e.g. O'Neill *et al.*, 2001; Skok *et al.*, 2001). IP analysis is a popular tool for evaluating strategy and for directing executive action for improvement. It was first introduced by Martilla and James (1977) as a simple framework whereby a product (or service) is evaluated on selected attributes in terms of each attribute's importance to the customer and perceived performance (i.e. customer's satisfaction). While independent assessments of importance or performance on an attribute are valuable, simultaneous consideration of both is required to realize the full potential of the information and to guide executive decision making (Martilla and James, 1977; Graf *et al.*, 1992; Shaw *et al.*, 2002). The importance and performance of the attributes are plotted on a grid, called an IP map, which is divided into four quadrants (Figure 1):

- (1) A. High importance-low performance.
- (2) B. High importance-high performance.

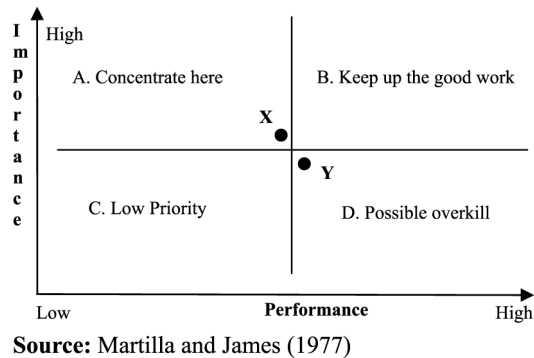


Figure 1.
Importance-performance
map

- (3) C. Low importance-low performance.
- (4) D. Low importance-high performance.

The four quadrants are labeled “concentrate here,” “keep up the good work”, “low priority” and “possible overkill,” respectively. It is recommended that resources be redirected from attributes in the “overkill” quadrant towards attributes in the “concentrate here” so as to move towards the “keep up the good work” quadrant (Martilla and James, 1977; Skok *et al.*, 2001).

Within the information systems literature, Skok *et al.* (2001) used IP analysis to evaluate the success of investments in information systems in the health club industry and O’Neill *et al.* (2001) applied it to evaluate service quality perceptions of online library services. Most recently, Levenburg and Magal (2005) demonstrated the value of IP analysis as a tool for assessing e-business strategy for SMEs, particularly in light of their limited resources. Throughout this literature, beginning with the Martilla and James’ (1977) initial IP framework, the application of importance-performance is predicated on the performance being measured as the customer’s satisfaction on the attribute under consideration. This is because “. . . consumer satisfaction is a function of both expectations related to certain important attributes and judgments of attribute performance” (Martilla and James, 1977, p. 77). In the tradition of all earlier IP researchers (such as Skok *et al.*, 2001; Shaw *et al.*, 2002; Bacon, 2003; Roskowski, 2003, to name a few), we consider user satisfaction to represent performance.

The simplicity of IP analysis, and its validation in numerous studies (albeit, in different contexts) over 25 years, has tremendous appeal to SMEs as a tool for evaluating e-business strategy.

IP research has used the traditional “quadrant” model (Martilla and James, 1977; Graf *et al.*, 1992; Skok *et al.*, 2001), the “gradient” model (Slack, 1994) and the “gap” model (Skok *et al.*, 2001; Shaw *et al.*, 2002). These models are used to evaluate the current strategy and offer recommendations to a move the organization to an optimal position. However, none specify the path to this optimal position. These studies assume that the two dimensions – importance and performance – are independent and that they do not influence each other. Given this assumption of independence, an infinite number of paths exist from the current position to the optimum position in the models.

Three recent studies (Sampson and Showalter, 1999; Roskowski, 2003; Matzler *et al.*, 2004) have argued that importance and performance are not independent (in addition

Slack (1994) hints of the existence of a relationship) and that importance is a causal function of performance. Three potential relationships are identified – positive, negative and v-shaped. Each has different implications with regard to strategy recommendations.

Given the potential relationships between importance and performance, IP analysis cannot be an effective tool for SMEs until the nature of this relationship is investigated and its consequences more fully understood. The purpose of this paper is to explore the relationship between importance and performance of the motivating characteristics of e-business in SMEs. This will allow for a better interpretation of the motivating characteristics of e-business and perhaps lead to better prescriptions for e-business success. SMEs will be better positioned to develop strategies, identify priorities and allocate resources. Additionally the results are expected to be a modest contribution to the IP literature. The IP literature discussed next briefly shows the evolution of the IP model and the recent confirmation of relationship between Importance and Performance, leading to the purpose of this paper.

2. Literature review

A major shortcoming of the quadrant model of Martilla and James (1977) is that a dramatic change in priority can result from a slight change in the position of an attribute in the grid (Bacon, 2003). In Figure 1, for example, if the position of an attribute changes from point *x* to point *y*, its priority changes dramatically from “concentrate here” to “overkill.” Bacon suggests the need for a model that allows for a more continuous transition from one priority to another. Slack (1994) developed such a model. His gradient-based IP map identifies four zones (Figure 2) starting from the top left (high importance/low performance), gradually transitioning to the bottom right (high performance/low importance). The four zones are labeled “urgent action,”

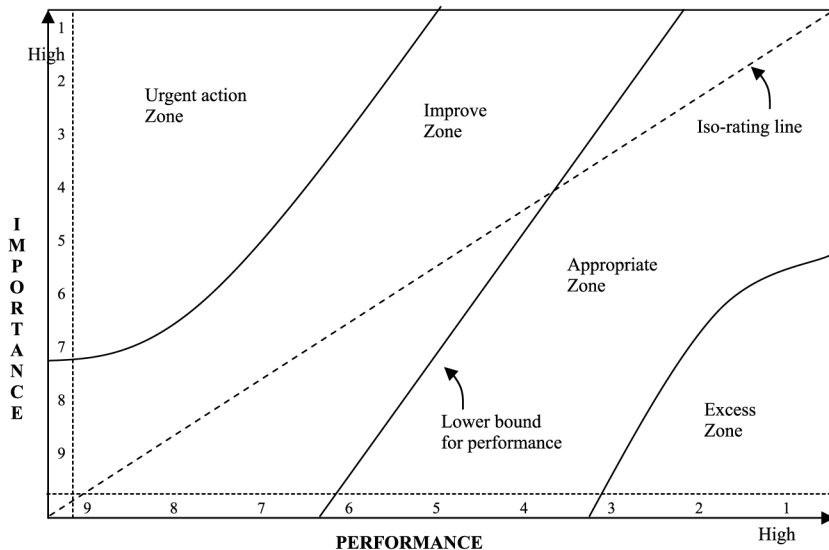


Figure 2.
Modified IP map

Sources: Slack (1994), Hawes and Rao (1985), with alterations

“improve,” “appropriate,” and “excess,” respectively. He further suggests a “lower bound of performance acceptability,” above which lies the region for improvement. It is recommended that organizations move from the “urgent action” or “excess” zone to the “appropriate” zone through redistribution of resources.

A third model, the “gap” model, is based on identifying performance gaps determined for each attribute by subtracting the satisfaction rating from the importance rating. These gaps are an indication of how well the organization has performed (O’Neill *et al.*, 2001; Skok *et al.*, 2001; Shaw *et al.*, 2002; Roskowski, 2003). Gap analysis is routinely used by consulting firms like Noel-Levitz specializing in higher education (Roskowski, 2003). Shaw *et al.* (2002) used gap analysis to measure service quality of IS/IT systems and 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).

For prescriptive purposes, a 45-degree upwards sloping line is inserted in the IP map, called the iso-rating line (see Figure 2) representing a perfect balance between importance and performance, and a zero performance gap (Hawes and Rao, 1985; Bacon, 2003). Anything above or below this line indicates a need for change in strategy. It is different from the “lower bound” of the gradient model, as the lower bound of performance line is defined by the firm and may vary from firm to firm, whereas along the iso-rating line, performance equals importance. It is recommended that organizations allocate resources to move attributes to the iso-rating line.

All three models recommend movement to some optimal point or space on the graph but none specify the path. Further, these models assume that attribute importance and attribute performance are independent and do not influence each other (Sampson and Showalter, 1999). If this is true, then the number of paths from the current position to the optimum point is infinite.

Slack (1994) initially suggested a possible relationship between importance and performance, that could influence priority. The existence of a relationship was confirmed and explicated by three studies (1999).

Sampson and Showalter (1999) hypothesized and found support for a negative relationship, that is, as performance increases, importance decreases. They reference Maslow’s hierarchy of needs theory to argue that, as performance increases and satisfies a need, the need becomes less important. However, they also found that for some attributes, there is a small region on the high end of the performance scale where importance begins to increase or remains unchanged (flat).

Roskowski (2003) also found strong evidence that importance and performance are related. He argues that for data with a wider range of performance values, the v-shape is visible (Figure 3a); else, only the right side of the v-shape is visible, indicating a positive relationship (Figure 3b). Matzler *et al.* (2004) argue that the nature of the relationship depends on the type of attribute – “basic factors,” “excitement factors,” and “performance factors,” – and suggest a negative, positive and no relationship, respectively.

These studies have a few limitations: for example, Sampson and Showalter’s study focused on dining facilities in middle schools – a monopolistic environment, which may not be representative of organizations at large. Roskowski’s study, set in the education industry, showed the V-shaped relationship being tentatively valid in only one of four data sets. Matzler *et al.*’s study focused only on the low and high values of performance and did not consider intermediate values, and, consequently, the presence

or absence of a V-shape could not be determined. Thus, while these studies indicate four potential relationships between importance and performance: no relationship, or a positive, negative, or V-shaped relationship (Figure 4), their results are inconclusive.

The purpose of our study is to explore the relationship between importance and performance of e-business motivations among SMEs. The existence of a relationship between importance and performance will likely influence e-business strategy and resulting recommendations for resource allocations. Understanding the specific nature of the relationship will reveal the path(s) towards the optimal position in the models and will further guide the strategy and recommendations.

3. Research methodology

Traditional IP analysis consists of identifying the variables of interest through literature review and/or use of managerial judgment, gathering data on the importance and performance dimensions of these variables using an appropriate survey instrument, plotting the data (average importance and average performance of each variable) to generate IP maps, and an analysis leading to strategy recommendations (Martilla and James, 1977; Skok *et al.*, 2001). We followed the first two steps described above to collect the data on the variables of interest in this study, namely, e-business

Figure 3.
Four-year public colleges
and four-year private
colleges

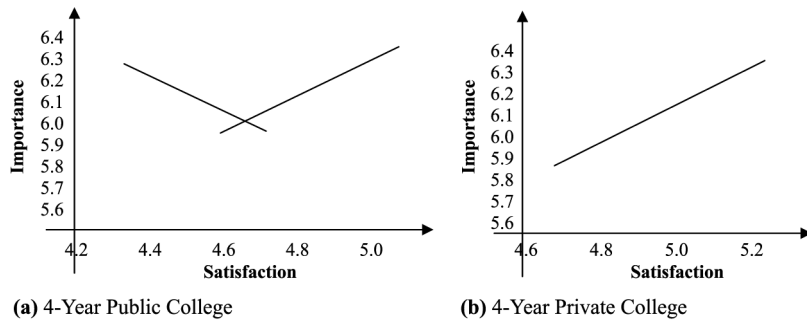
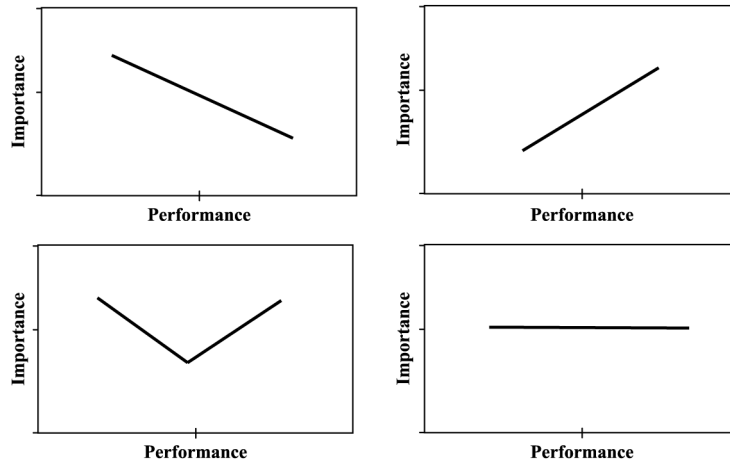


Figure 4.
IP Relationships from the
literature



motivations among SMEs. Then we followed Sampson and Showalter's (1999) methodology to evaluate the relationship between importance and performance: correlation analysis to identify the existence of a relationship between importance and performance, and plotting the data to investigate the nature of this relationship.

E-business motivations were identified from various streams of research and validated during the pilot testing of the survey instrument. In our previous research (Levenburg *et al.*, 2006) we define 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 (Levenburg *et al.*, 2006). 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 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.

A total of 19 motivations and four higher-level factors so identified are reproduced in Table I. Importance and performance data on these items were collected using a survey, with five point Likert-type scales. The questionnaire was mailed to 9,365 CEOs (or owners) of family owned businesses located across the US, with employees less than 500, a commonly used and recommended criterion to identify SMEs (Gersick *et al.*, 1997; Poza, 2004; SBA, 2004). Within the US, family owned firms account for 80 to 95 percent of all incorporated businesses (Daily and Dollinger, 1991), making family owned businesses the most common form of business organization in the US (Thong, 1999; Pflughoeft *et al.*, 2003; Grandon and Pearson, 2004; Wymer and Regan, 2005). A total of 439 responses were received for a response rate of 4.7 percent. 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 percent) were determined to be no longer in existence. Excluding the surveys sent to defunct businesses results in a response rate of 5.5 percent, which seems to be common in studies conducted among this population (e.g. Thong, 1999; Pflughoeft *et al.*, 2003; Grandon and Pearson, 2004).

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 (Thong, 1999; Pavlou, 2003; Grandon and Pearson, 2004). 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.

Of the respondents, 82 percent had revenues of greater than \$1 million and 18 percent 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 internet. These small family owned businesses are likely to be one-person or "mom and pop" operations that 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.

Table I.
Factor analysis:
e-business motivations
among SMEs

Market factor	E-profitability factor	Communication factor	Research factor
Enhance company image/brand	Sell products online	Improve communications with customers	Improve marketing intelligence
Distribute product/company information	Reduce administrative costs	Improve communications with channel partners	Find information about new sources of supply
Identify new markets or customers	Reduce direct costs of creating product or service	Improve communications with employees	Find information on industry or other economic data
Generate sales leads	Reduce shipping costs	Comply with requirements of a large customer or supplier	
Gain an edge over competition	Reduce advertising expenses for traditional media		
Provide or improve customer support	Increase net profit		

4. Results

The first step in the analysis was to determine if importance and performance are related. Following Roskowski (2003) and Sampson and Showalter (1999), we used correlation analysis to assess the presence of a relationship. Table II shows these

E-business motivations/attribute	Mean imp.	Mean sat.	ρ	Pr > $ \rho $
1. Enhance company image/brand	3.96	3.57	0.49812	<0.0001
2. Distribute product/company information	3.95	3.53	0.45979	<0.0001
3. Identify new markets or customers	3.53	3.16	0.31734	<0.0001
4. Generate sales leads	3.75	3.07	0.26597	<0.0001
5. Gain an edge over competition	3.58	3.30	0.42280	<0.0001
6. Improve communications with customers	3.96	3.71	0.57251	<0.0001
7. Improve communications with channel partners	2.68	3.22	0.57498	<0.0001
8. Improve communications with employees	2.49	3.16	0.58994	<0.0001
9. Comply with requirements of a large customer or supplier	2.66	3.26	0.62464	<0.0001
10. Sell products online	2.62	2.90	0.20461	0.0007
11. Improve marketing intelligence	3.08	3.18	0.44445	<0.0001
12. Find information about new sources of supply	3.18	3.48	0.65706	<0.0001
13. Find information on industry or other economic data	3.21	3.50	0.58243	<0.0001
14. Reduce administrative costs	2.71	3.08	0.47928	<0.0001
15. Reduce direct costs of creating product or service	2.38	3.06	0.44984	<0.0001
16. Reduce shipping costs	1.98	2.93	0.34872	<0.0001
17. Reduce advertising expenses for traditional media	2.73	3.10	0.46178	<0.0001
18. Increase net profit	3.36	3.03	0.19493	0.001
19. Provide or improve customer support	3.78	3.53	0.50737	<0.0001
Marketing	3.75	3.35	0.43	<0.0001
Communication	3.17	3.27	0.53	<0.0001
E-profits	2.60	2.99	0.36	<0.0001
Research	3.14	3.35	0.57	<0.0001
Overall	3.13	3.19	0.43	<0.0001

Table II.
Correlation between
importance and
performance

Note: Rho, ρ = Spearman correlation coefficient

correlations. All correlations are significant at $\alpha = 0.001$. This is consistent with the findings of Roskowski and Sampson and Showalter.

The second step was to determine the nature of the relationship between importance and performance. We followed Sampson and Showalter's method wherein average importance scores are computed for each level of satisfaction and then plotted. The results for the four factors are shown in Figure 5. All of the plots in our study indicate the "V" shape when considering data on the performance scale between scale points "2" and "5." However, when the data on the performance scale are expanded to include the lowest level ("1") on the scale used, the "N" shape emerges. This "N" shape is clearly visible for 17 of the 19 individual variables, the four factors, and the overall average.

Figure 6 shows the IP plot for the average of all the variables, superimposed on the three models. Given that plots for almost all the individual variables and the four

Profit					
Importance	2.30	3.47	2.28	3.97	4.65
Satisfaction	1	2	3	4	5
Marketing					
Importance	2.92	3.86	3.32	4.35	4.78
Satisfaction	1	2	3	4	5
Communication					
Importance	1.29	3.28	2.34	4.16	4.65
Satisfaction	1	2	3	4	5
Research					
Importance	1.70	3.35	2.69	3.97	4.57
Satisfaction	1	2	3	4	5
Overall					
Importance	2.17	3.60	2.63	4.16	4.68
Satisfaction	1	2	3	4	5

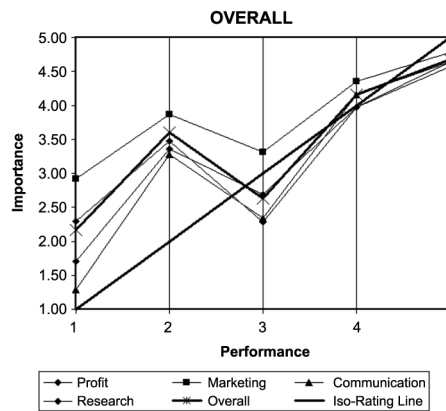


Figure 5. IP Plot for all four factors and the overall total of the 19 variables

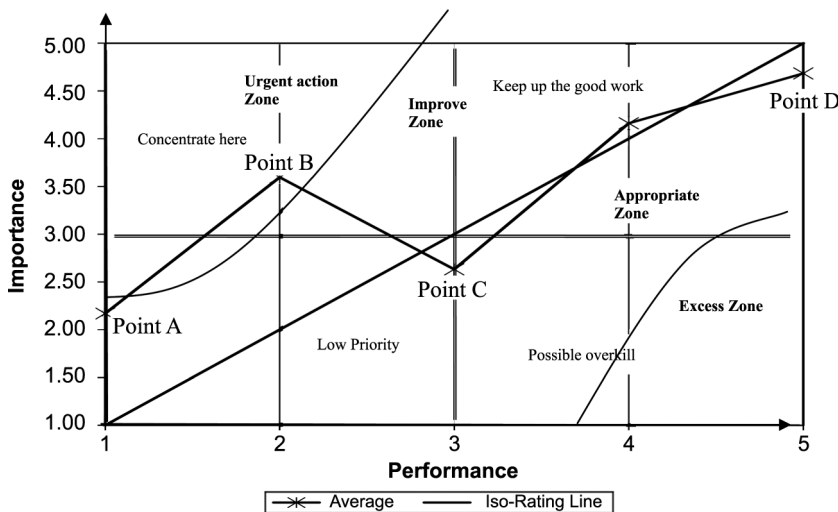


Figure 6. Results superimposed on IP models

factors are extremely similar, this plot of the average is considered sufficiently representative. Literature on IP relationships explains the IP relationship as the path of change (Sampson and Showalter, 1999; Roskowski, 2003; Matzler *et al.*, 2004). For instance, Sampson and Showalter (1999) demonstrate how increase in satisfaction or performance led to a subsequent decrease in importance. Following Roskowski's and Sampson and Showalter's example, we arrived at an N-shaped IP relationship that describes a path showing the effect of an increase in satisfaction or performance of e-business in SMEs affects on its importance.

Looking at Figure 6, we can see that initially both importance and performance are low (point A). Additionally, point A is in the "low priority" quadrant of the quadrant model, in either the urgent or improve zone of the gradient model, and above the iso-rating line of the gap model, indicating a performance gap. As performance increases, movement is towards Point B which is in the "concentrate here" zone, or the "urgent" zone. Additionally, the performance gap increases. Thus, an initial increase in performance leads to a movement towards the most undesirable position on the map, as indicated in all three models. Further increases in performance result in a downward movement towards the iso-rating line, possibly moving past the iso-rating line (point C) into the "possible overkill" and "improve" zones. Point C is the local minimum point on the path. According to Sampson and Showalter (1999), this minima corresponds to a point where performance meets expectations. Additional performance improvements result in a movement towards point D, roughly following the iso-rating line and into the "keep up the good work" and "appropriate" zone.

5. Discussion

The purpose of this paper is to explore the relationship between importance and performance, to see if the relationships suggested in the literature hold for our population of family businesses engaging in e-business. We find that there does indeed appear to be a specific path that these firms follow as they move across the IP map. Our findings indicate the presence of an "N" shaped relationship that is an extension of the "V" shape identified by Roskowski (2003). It is not surprising that we find some firms at point A in our map, given the indications in the literature about the lack of resources and understanding of e-business among many such firms. Smaller family firms may simply feel that doing something is better than doing nothing to respond to internal and external pressures. As a result, these firms may use internet connectivity to adopt relatively simple applications (e.g. e-mail, setting up web sites, or conducting business-related research) in order to demonstrate to others that they are indeed "with it" and by having an internet presence, have entered the "internet age."

From point A, performance improvements that follow may result from organizational learning or external influences. The movement from point A to point B, in fact, suggests that as e-business performance increases within family firms, they begin to realize that e-business may hold the potential to make a substantial contribution to the organization's goals. The increased awareness results in an increasing importance placed on e-business activities.

This may be accompanied by an increase in resources allocated to e-business activities and an increase in the number and type of applications implemented, moving the firm to point C, a natural tendency towards the optimum (iso-rating line), due to external influences, or a conscious decision on the part of the firm. As performance

increases further, satisfaction increases and the urgency (importance) placed on e-business activities becomes sated, causing a movement towards the equilibrium point C. Similar arguments have been offered by Sampson and Showalter (1999), who argue that satiated needs lead to reduced importance. Once an optimum is attained, firms appear to remain at an optimal level (along the iso-rating line) in spite of changes in performance.

We find that the importance of the four motivations that drive family firms online change as they move along the N-path. Initially (at performance level 1), firms are largely driven by the marketing aspects of e-business and their efforts are focused on a desire to use the web for promoting the firm and its products and services (see Figure 5 and the high scores for this factor in Table I). Both Johnston *et al.* (2007) and Schubert and Leimstoll (2007) found that SMEs have also reported greater financial impact on the firm from the use of customer-focused applications (e.g. customer service, order processing) as opposed to internally-focused applications. This is possibly because the applications used to support these goals are among the most well-known, the easiest to use and possibly the least expensive to implement (e.g. e-mail or corporate web site).

On the other hand, they may be slower or fail to recognize the value of other uses of e-business applications to achieve gains in communication and profitability goals (e.g. selling products online), which may entail greater human and financial resources than the firm is able to commit. At this point, Chong and Pervan's (2007, p. 16) perspectives on perceived relative advantage may be pertinent. According to them:

After making the decision to adopt EC [electronic commerce], it also needs to be perceived by SMEs as a better alternative to existing practices in the business. However, very often the lack of knowledge of the advantages that EC offers can cause impatient firms to give up and discontinue the adoption and implementation (Levenburg *et al.*, 2006).

However, as performance gains are achieved in e-business, the importance levels of all factors increase, but the importance of the non-marketing factors increases the most. Eventually (at performance levels 4 and 5), all factors appear to converge towards equal levels of importance.

6. Conclusions, limitations and implications for future research

The purpose of this paper was to explore the relationship between importance and performance of the motivating characteristics of e-business among SMEs. We found that importance and performance are indeed related. The specific nature of the relationship was somewhat different from that suggested in the literature. The results provide additional validation for the use of IP maps as low cost tools for SMEs to shape e-business strategy. Firms can first identify their location on the IP map relative to the N-shaped path and then identify the path to the optimum location on the map. For example, the map will identify the extent of change in performance necessary to reach the optimum. This can be used to influence resource allocations decisions.

A key point is that changes in performance will influence importance. Strategy and resource allocation decisions can produce changes in performance, as demonstrated by the left to right horizontal movements along the performance axis. Performance change, in turn, leads to change in importance and the movement to a new point on the IP map. This continuous interplay between importance and performance means that both must be periodically measured and evaluated as inputs into strategic e-business

planning if scarce resources are to be managed most effectively. Indeed, this is no different from basic models of strategic business management wherein the firm follows an ongoing process of strategy formulation, strategy implementation, and evaluation and control.

Several interesting questions emerge. Does the maturity of the phenomenon being investigated (e-business, in our case) influence the path across the IP map? For instance, Sampson and Showalter (1999) found a downward sloping path when assessing the quality of food service, which could be considered a rather mature and “stable” phenomenon (i.e. one would doubt that the criteria for measuring the quality of food service (e.g. cleanliness) would substantially change over time). Does the path of a “stable” phenomenon differ from the path of one that is more “evolutionary,” such as e-business? If so, do theories of learning or those related to stages of growth offer insight on this phenomenon?

Another question that emerges is the impact of key variables (e.g. the amount of financial and other resources allocated, the number and type of applications implemented, or the technological infrastructure used) on the path identified? Since the identification of the path is an important first step in developing a tool for small firms to define their e-business strategies, make resource allocation decisions, and assess the impact of these decisions, knowing what variables impact IP analysis will help to fine-tune strategy formulation.

It must be recognized that all data in this study was collected from US firms. Thus, one must be cautious in drawing generalizations based on this research sample, since the findings may not be true globally. Finally, given the rather limited e-business research on SMEs, we recognize that this study represents an early, exploratory work. Consequently, we focused explicitly on e-business motivations without any dependent variables. Further research employing longitudinal studies would help confirm the direction of travel along the N-shaped relationship.

References

- Armstrong, J.S. and Overton, T.S. (1977), “Estimating non-response bias in mail surveys”, *Journal of Marketing Research*, Vol. 14 No. 3, pp. 396-402.
- Bacon, D.R. (2003), “A comparison of approaches to importance-performance analysis”, *International Journal of Market Research*, Vol. 45 No. 1, pp. 55-71.
- Barnes, D., Hinton, M. and Mieczkowska, S. (2003), “Competitive advantage through e-operations”, *Total Quality Management and Business Excellence*, Vol. 14 No. 6, pp. 659-75.
- Beckinsale, M., Levy, M. and Powell, P. (2006), “Exploring internet adoption drivers in SMEs”, *Electronic Markets*, Vol. 16 No. 4, pp. 361-70.
- Chong, S. and Pervan, G. (2007), “Factors influencing the extent of deployment of electronic commerce for small and medium-sized enterprises”, *Journal of Electronic Commerce in Organizations*, Vol. 5 No. 1, pp. 1-29.
- Daily, C.M. and Dollinger, M.J. (1991), “Family firms are different”, *Review of Business*, Vol. 13 Nos 1/2, pp. 3-5.
- Eikebrokk, T.R. and Olsen, D.H. (2007), “An empirical investigation of competency factors affecting e-business success in European SMEs”, *Information and Management*, Vol. 44 No. 4, pp. 364-83.
- Gersick, K.E., Davis, J.A., Hampton, M.M. and Lansberg, I. (1997), *Generation to Generation: Life Cycles of Family Business*, Harvard Business School Press, Boston, MA.

- Graf, L.A., Hemmasi, M. and Nielsen, W. (1992), "Importance-satisfaction analysis: a diagnostic tool for organizational change", *Leadership & Organization Development Journal*, Vol. 13 No. 6, pp. 8-12.
- Grandon, E.E. and Pearson, M.J. (2004), "Electronic commerce adoption: an empirical study of small and medium US businesses", *Information and Management*, Vol. 42 No. 1, pp. 197-216.
- Hamill, J. and Gregory, K. (1997), "Internet marketing in the internationalization of adopters and non-adopters of WWW", *Journal of Marketing Management*, Vol. 13 Nos 1-3, pp. 9-28.
- Hawes, J.M. and Rao, C.P. (1985), "Using importance-performance analysis to develop health care marketing strategies", *Journal of Health Care Marketing*, Vol. 5 No. 4, pp. 19-25.
- Haynes, P.J., Becherer, R.C. and Helms, M.M. (1998), "Small and mid-sized businesses and internet use: unrealized potential?", *Internet Research*, Vol. 8 No. 3, pp. 229-35.
- Jeffcoate, J., Chappell, C. and Feindt, S. (2002), "Best practice in SME adoption of e-commerce", *Benchmarking*, Vol. 9 No. 2, pp. 122-32.
- Johnston, D.A., Wade, M. and McClean, R. (2007), "Does e-business matter to SMEs? A comparison of the financial impacts of internet business solutions on European and North American SMEs", *Journal of Small Business Management*, Vol. 45 No. 3, pp. 354-61.
- Lambert, D. and Harrington, T. (1990), "Measuring non-response bias in customer service mail surveys", *Journal of Business Logistics*, Vol. 11 No. 2, pp. 5-26.
- Levenburg, N.M. and Magal, S.R. (2005), "Applying importance-performance analysis to evaluate e-business strategies among small firms", *E-Service Journal*, Vol. 3 No. 3, pp. 29-48.
- Levenburg, N., Magal, S.R. and Kosalge, P. (2006), "An exploratory investigation of organizational factors and e-business motivations among SMFOEs in the US", *Electronic Markets*, Vol. 16 No. 1, pp. 70-84.
- Martilla, J.A. and James, J.C. (1977), "Importance-performance analysis", *Journal of Marketing*, Vol. 41 No. 1, pp. 77-9.
- Matzler, K., Bailom, F., Hinterhuber, H.H., Renzl, B. and Pichler, J. (2004), "The asymmetric relationship between attribute-level performance and overall customer satisfaction: a reconsideration of the importance-performance analysis", *Industrial Marketing Management*, Vol. 33 No. 4, pp. 271-7.
- O'Neill, M., Wright, C. and Fitz, F. (2001), "Quality evaluation in on-line service environments: an application of the importance-performance measurement technique", *Managing Service Quality*, Vol. 11 No. 6, pp. 402-17.
- Pavlou, P.A. (2003), "Consumer acceptance of electronic commerce: integrating trust and risk with the technology acceptance model", *International Journal of Electronic Commerce*, Vol. 7 No. 3, pp. 101-34.
- Pflughoeft, K.A., Ramamurthy, K., Soofi, E.S., Yasai-Ardekani, M. and Zahedi, F.M. (2003), "Multiple conceptualizations of small business web use and benefit", *Decision Sciences*, Vol. 34 No. 3, p. 467.
- Poza, E.J. (2004), *Family Business*, South-Western, Mason, OH.
- Pratt, J.H. (2002), *E-Biz: Strategies for Small Business Success*, Small Business Administration Office of Advocacy, Washington, DC.
- Rayport, J.F. and Sviokla, J.J. (1995), "Exploiting the virtual value chain", *Harvard Business Review*, Vol. 73 No. 6, p. 75.
- Roskowski, M.J. (2003), "The nature of the importance-satisfaction relationship in ratings: evidence from the normative data of the Noel-Levitz student satisfaction inventory",

- Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, Vol. 16, pp. 211-21.
- Sampson, S.E. and Showalter, M.J. (1999), "The performance-importance response function: observations and implications", *The Services Industries Journal*, Vol. 19 No. 3, pp. 1-25.
- SBA (2004), *A Voice for Small Business*, US Small Business Administration, Washington, DC.
- Schubert, P. and Leimstoll, U. (2007), "Importance and use of information technology in small and medium-sized companies", *Electronic Markets*, Vol. 17 No. 1, pp. 38-55.
- Shaw, N.C., DeLone, W.H. and Niederman, F. (2002), "Sources of dissatisfaction in end-user support: an empirical study", *Database for Advances in Information Systems*, Vol. 33 No. 2, pp. 41-56.
- Skok, W., Kophamel, A. and Richardson, I. (2001), "Diagnosing information systems success: importance-performance maps in the health club industry", *Information and Management*, Vol. 38, pp. 409-19.
- Slack, N. (1994), "The importance-performance matrix as a determinant of improvement priority", *International Journal of Operations & Production Management*, Vol. 14 No. 5, pp. 59-76.
- Thong, J.Y.L. (1999), "An integrated model of information systems adoption in small businesses", *Journal of Management Information Systems*, Vol. 15 No. 4, pp. 187-214.
- Vlosky, R.P. and Smith, T.M. (2003), "eBusiness in the US hardwood lumber industry", *Forest Products Journal*, Vol. 53 No. 5, pp. 20-1.
- Wilder, C., Caldwell, B. and Dalton, G. (1997), "More than electronic commerce", *Information Week*, pp. 30-40.
- Wymer, S.A. and Regan, E.A. (2005), "Factors influencing e-commerce adoption and use by small and medium businesses", *Electronic Markets*, Vol. 15 No. 4, pp. 438-53.

Further reading

- Crompton, J.L. and Duray, N.A. (1985), "An investigation of the relative efficacy of four alternative approaches to importance-performance analysis", *Academy of Marketing Science*, Vol. 13 No. 4, pp. 69-81.
- Swinyard, W.R. (1980), "Strategy development with importance/performance analysis", *Journal of Bank Research*, Vol. 10 No. 4, pp. 228-34.
- Weber, K. (2000), "Meeting planners' perceptions of hotel-chain practices and benefits: an importance-performance analysis", *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 41 No. 4, pp. 32-8.
- Yeo, A.Y.C. (2003), "Examining a Singapore Bank's competitive superiority using importance-performance analysis", *Journal of American Academy of Business*, Vol. 3 Nos 1/2, pp. 155-61.

About the authors

Simha R. Magal is Professor of Management (MIS) and Director, ERP initiative, in the Seidman College of Business, Grand Valley State University. He received his PhD from the University of Georgia. His primary research interests include e-business and enterprise systems. His articles have appeared in such publications as *MIS Quarterly*, *Journal of MIS*, and *Information and Management*, among others. He is editor of AISWorld Net (www.aisworld.org) and has served on the editorial boards of several journals. He served as co-chair of the inaugural conference of the Midwest Association for Information Systems (MWAIS) in 2006 and is president-elect of MWAIS. Simha R. Magal can be contacted at: magals@gvsu.edu

Parag Kosalge is Assistant Professor of Management (MIS) at the Seidman College of Business Grand Valley State University. His research interests are in the application of IT to business processes. He has headed projects for process reengineering, B2B e-commerce, SAP implementation, and XML databases. He is an SAP-certified application consultant. His work has appeared in journals like *Electronic Markets*, *Journal of Information Technology Management*, *International Journal of Business Excellence*, and *International Journal of Electronic Business*. He has served on the editorial board of JITTA. He also serves as a business consultant to organizations.

Nancy M. Levenburg is an Associate Professor in the Management Department at Grand Valley State University. Her primary research interests include small business management, family business, and strategic applications of information technologies. She has written numerous articles that have appeared in such publications as *International Small Business Journal*, *Journal of Small Business Strategy*, *Family Business Journal*, *Information Systems Journal*, *Journal of Business Ethics*, and *Case Research Journal*, among others. Dr Levenburg was the recipient of the US Small Business Administration's award as "Research Advocate of the Year – 2003" for the State of Michigan, and has been twice honored by GVSU as a Family Owned Business Institute Research Scholar.

To purchase reprints of this article please e-mail: reprints@emeraldinsight.com
Or visit our web site for further details: www.emeraldinsight.com/reprints

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.