 Strategic Indicators of B2B e-marketplace Financial Performance

TIMOTHY M. LASETER AND SAMUEL E. BODILY

INTRODUCTION

Business-to-business (B2B) e-marketplaces — new entities spawned by the Internet — provide a broad range of supply chain management services, including digital catalogues, online auctions, logistics services, supply chain planning and even design collaboration. Although the majority of the e-marketplaces launched in the past decade have failed, hundreds have survived and in some cases thrived (Day et al. 2003; Laseter and Capers 2002). This paper reports a study of a sample of B2B e-marketplace survivors to identify the attributes linked to financial performance.

The paper presents a conceptual framework for B2B e-marketplace success drawing upon the strategic management literature of Industrial Organization Economics, the Resource-Based View and Competitive Heterogeneity. The conceptual model is tested through regression analyses of revenue and profitability drivers captured in a survey of 273 surviving e-marketplaces. While by no means resolving the varying viewpoints regarding the strategic indicators of financial success, the results do provide insights into successful strategies for B2B e-marketplaces. In this study the variables with special significance relate to ownership, funding levels, speed, continuity, and to some extent the scope of service offering.

Keywords: e-commerce, supply chain management, B2B, industrial organization economics, resource-based view, competitive heterogeneity

Abstract

Business-to-business (B2B) e-marketplaces — new entities spawned by the Internet — provide a broad range of supply chain management services, including digital catalogues, online auctions, logistics services, supply chain planning and even design collaboration. Although the majority of the e-marketplaces launched in the past decade have failed, hundreds have survived and in some cases thrived (Day et al. 2003; Laseter and Capers 2002). This paper reports a study of a sample of B2B e-marketplace survivors to identify the attributes linked to financial performance.

Although thousands were launched during the heyday of the Internet, the majority failed in a few short years (Day et al. 2003; Laseter et al. 2001; Laseter and Capers 2002). This paper reports a study of a sample of the B2B e-marketplaces survivors, identifying the attributes that lead to survival and, in rare instances, a high degree of success.

An extensive literature review of e-commerce (Kauffman and Walden 2001) highlights the need to ‘cultivate theory for the value and performance of B2B electronic markets’. Although the Internet bubble stimulated a number of books on e-marketplaces over the past few years (Cunningham 2001; Kambil and Heck 2002; O’Connell 2000; Raisch 2001; Sculley and Woods 2001), the rapid growth of e-commerce and B2B electronic markets has resulted in an extensive literature on the topic. This paper contributes to the literature by providing insights into the attributes that lead to financial success.

The paper presents a conceptual framework for B2B e-marketplace success drawing upon the strategic management literature of Industrial Organization Economics, the Resource-Based View and Competitive Heterogeneity. The conceptual model is tested through regression analyses of revenue and profitability drivers captured in a survey of 273 surviving e-marketplaces. While by no means resolving the varying viewpoints regarding the strategic indicators of financial success, the results do provide insights into successful strategies for B2B e-marketplaces. In this study the variables with special significance relate to ownership, funding levels, speed, continuity, and to some extent the scope of service offering.

Keywords: e-commerce, supply chain management, B2B, industrial organization economics, resource-based view, competitive heterogeneity

Authors

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CONCEPTUAL MODEL OF E-MARKETPLACE SUCCESS

Our conceptual model for predicting B2B e-marketplace success builds upon the quantitative and qualitative findings of prior research into e-marketplaces described above. Given the embryonic phase of empirical research on these entities and our own exploratory objective, we did not rely on existing measurement instruments but developed our conceptual model with theoretical guidance from the strategy literature in Industrial Organization Economics, Competitive Heterogeneity, and the RBV. For example, chapter 2 of Barney (2002) discusses measures of survival that are commonly used for strategic success along with accounting measures of historical performance, ultimately extolling the benefits of multiple measures of performance. In our sample, all of the entities are among the relatively small subset of survivors, so we will be comparing the degree of success of survivors, and implicitly the prospects for future survival. Our approach to financial performance reflects the challenges of measuring a diverse set of businesses still in the early stages of development.

The early state of development of B2B e-marketplaces and the high rate of failure suggested that we should start modestly with our measures of financial performance. Revenue for the then current year (2002) measures how large the entity became, in a sense how well it survived, and its prospects for the future. It is something other researchers (Watson et al. 2003) have successfully tested recently. A revenue measure was also more likely to be revealed by respondents than other, more proprietary, measures — an important consideration given that few e-marketplaces are publicly traded and tend to consider most financial information highly private.

Our second financial success measure captures the financial speed and momentum of the entity. We used the elapsed time from start-up for an e-marketplace to achieve one of three different financial milestones: positive contribution margin, break-even in net profit before tax, or positive operating cash flow on a quarterly basis. In most cases, the first milestone reached would be a positive contribution margin, but some e-marketplaces, particularly ones with consortium ownership, operate on an annual subscription basis and accordingly do not measure contribution margin. Given the entrepreneurial stage of other e-marketplaces, financial performance measures focus on cash flow rather than accounting profit. The wide number of combinations and the exploratory nature of this research into the most basic drivers of success warrants combining the three possible milestones into a single dependent variable, Time to First Financial Milestone.

We singled out six independent variables addressing key strategic decisions required of any B2B e-marketplace: Industry Concentration, Ownership Structure, Initial Funding Ratio, Service Breadth, Launch Speed, and Strategic Continuity. We also employed Age as a control variable in the first model given that the start-ups under study were launched at different times. Although size is often used as another control variable when examining steady-state performance of companies, this is unnecessary given our focus on start-ups and choice of the time-based dependent variable for profitability. The specific metric employed for each of the six independent variables and the hypothesized relationships to the dependent variables are shown in Figure 1 and discussed in the following paragraphs.
In considering the impact of the choice of industry on the success of a B2B e-marketplace we turned to Industrial Organization Economics (IOE). According to IOE theory, concentrated industries emerge along with oligopoly behaviour (Shapiro 1992) where scale economies are significant. As noted by Gilligan (2003), economists tend to believe that concentrated oligopolies would resort to collusion, raising prices and lowering efficiency. However recent, rigorous research (Hou and Robinson 2000) disputes this, showing that industry average returns are negatively related to industry concentration. Even though the findings may conflict, a measure of Industry Concentration addresses an important issue from an industrial organization perspective and accordingly warrants inclusion in our conceptual model.

In the case of B2B e-marketplaces, we expect that concentration will largely have its effect through buyer power. Porter (1998) identifies buyer power as one of the ‘five forces’ driving industry profitability and argues that concentrated power among a few buyers offers significant strategic leverage — placing the seller company at a disadvantage. Lee and Clark (1996) highlighted the ‘lack of market power necessary to enforce the change’ as a key barrier to e-marketplace adoption. Large customers in a concentrated industry can exert significant buyer power and capture most of the value in the commercial exchange thereby delaying the time for the B2B e-marketplace to achieve financial milestones, suggesting a positive relationship between Industry Concentration and Time to First Financial Milestone. Revenue, however, may respond differently. On one hand, an e-marketplace could generate large revenues with only a few, large customers in a concentrated industry. On the other hand, the selling process for a large company may be far more difficult than for a small company, which could dampen revenues. Ultimately, these affects would offset one another giving us competing hypotheses to test in our study of the effects of industry concentration on revenues. To capture the impact of industry concentration we asked respondents to measure buy-side industry concentration on a seven-point Likert scale.

Our second factor is Ownership Structure, consistent with ideas of competitive heterogeneity. We chose to measure this effect with a dummy variable indicating...
whether the e-marketplace operated with consortium ownership as cited in prior research on B2B e-marketplace failure (Laseter and Capers 2002). Consortia offer a special form of strategic alliances — a subject examined by Spekman (1990) as well as by Harbison and Pekar (1998) who noted that ‘some companies are staking their futures on consortiums’. E-marketplace consortia also offer a superb example of the new concept of ‘co-opetition’ as coined by Bradenburger and Nalebuff (1996). Consortium membership provides an immediate source of revenue as members are typically major customers. However, a consortium ownership model creates a unique tension in sharing the value creation (Brunn et al. 2002).

We hypothesize that the challenge inherent in such a shared resource creates a ‘tragedy of the commons’ (Baird et al. 1995). This dynamic will bias the consortium members towards the immediate rewards of lower transaction fees for the owner-members, which accordingly would lower the profitability for the e-marketplace entity. Furthermore, with the bursting of the Internet stock bubble, any anticipated future rewards from a high valuation for the e-marketplace have become less relevant. In sum, consortium Ownership Structure should have the desirable impact of a positive relationship to Revenues due to the transaction volume of customer/owners, but the undesirable impact of a positive relationship to Time to First Financial Milestone as the financial returns to members gain priority over e-marketplace profits.

Initial funding serves as a key strategic factor in line with the RBV because it helps an e-marketplace finance the services necessary to generate revenues. Watson et al. (2003), however, tested the significance of funding for new venture survival without finding a significant relationship. We hypothesized that funding alone provides an inadequate view without some metric to assess the scope of funding needed, so we chose to scale the funding relative to the number of services offered by the e-marketplace in the form of a variable called Initial Funding Ratio. This approach removes the risk that an un-scaled measure of funding and the variable Service Breadth might interact since a high level of funding can support investment in a broad service offering while management may have to reign in its envisioned scope of services if the initial funding falls short. We chose a logarithmic transformation of the ratio consistent with an expected declining return to incremental funding.

With regard to Service Breadth, we drew upon the IOE argument that sustainable advantage is due, in part, to ‘economies of scope’ (Ghemawat 1986; Panzar 1992). As such we measured the range of services offered by an e-marketplace. In Laseter et al. (2001), the impact of service offering breadth was explored using cluster analysis to differentiate narrowly focused auction houses and catalogue buying e-marketplaces from the broader, full service e-marketplaces. Brunn et al. (2002) also highlighted the scope of services as a key strategic parameter for e-marketplaces. We hypothesize that more services generate more revenue and, ultimately provide economies of scope that will yield greater profitability. However, we anticipate that in the short run, the incremental investment of time and money in a broader range of services may lengthen the time required to reach profitability. To measure the Service Breadth, we summed the number of services from a predefined list of six drawn from Laseter et al. (2001) and an optional field for Other Value Added Service.

All of the previously discussed factors address strategic decisions rather than execution effectiveness. Drawing upon the RBV, we included a variable to capture the e-marketplace’s Execution Speed as a potential source of competitive advantage. As noted by Verona (1999), the RBV has been used extensively in examining the effectiveness of product development. For example, Zahra and Nielsen (2002) analysed 119 companies and demonstrated that ‘internal human and technology-based manufacturing sources are positively associated with successful technology commercialization.’ Zhu and Kraemer (2002) recently argued for the use of the RBV in examining ‘net enhanced organizations’ while Brunn et al. (2002) highlighted the importance of first-mover advantage in crafting a winning strategy for e-marketplaces. Specifically, we posit that the speed with which an e-marketplace launches its first pilot should influence its revenue as well as how quickly it achieves financial milestones. We measured Execution Speed by finding the earliest introduction dates from the range of services offered by the company relative to the e-marketplace launch date. A faster launch offers more time to build revenue and, accordingly, the Execution Speed should favourably affect Revenue and exhibit a negative regression coefficient.

Likewise, a speedy launch should lower the time to reach financial success and accordingly produce a positive relationship between Execution Speed and Time to First Financial Milestone. Although our first five variables captured early strategic decisions of the e-marketplace we also chose to include a variable to measure Strategic Continuity, consistent with both competitive heterogeneity and the RBV. Ganesh and Madanmohan (2004) note that ‘either the marketplaces successfully adapted into new forms or they closed down’. For example, Newview Technologies ‘develops innovative Process Management Technology solutions that coordinate and streamline processes across business platforms’ (Newview 2003) even though it was originally founded in September 1998 as eSteel. The e-marketplace changed its name in November 2001 to signal a change in strategy. Such a major change, even if strategically appropriate, probably slows the growth and delays profitability. We measured Strategic Continuity by asking respondents to select as many descriptors of their business model as applicable from a list which included the term ‘e-marketplace’. We
anticipate that those companies that no longer accept the e-marketplace descriptor would have lower Revenue and take longer to achieve one of the three financial milestones. The use of variables like this one that are unique to an industry is not unprecedented in the literature. Flagg et al. (1991) used variables unique to the oil industry, such as ‘success in finding reserves’ to predict success.

SURVEY METHODOLOGY AND RESPONDENT PROFILE

The dynamic nature of B2B e-marketplaces presents inherent challenges in establishing a database for study. Not only are companies constantly failing, but many evolve their business models in the struggle to achieve success (Ganesh and Madanmohan 2004). We contacted 273 companies from an original population of 515 survivors in a database used in prior research. Our subset excluded e-marketplaces for which we could not obtain a physical address and an executive contact name.

Our cover letter and survey indicated two sponsors of the study: The Darden Graduate School of Business and the quarterly journal strategy+business (contact lead author for a copy of the letter and survey instrument). We invited the recipient to participate in the study and assured anonymity of their response unless they granted explicit approval. To encourage response, we offered a copy of a final report resulting from the research and also enclosed a copy of a previously published strategy+business article (Laseter et al. 2001). Respondents were also offered the option of completing the survey online at the Darden School website as an alternative to the paper-based version enclosed in the mailing.

We attempted to contact each recipient via telephone and/or email to encourage response and ultimately received 61 responses, for a 22% response rate. As shown in Figure 2 response rates were quite consistent across regions, ranging from a low of 21% for North America to 22% for Asia/Pacific/Japan to 26% for Europe.

Our mailing list targeted the senior-most executive we could identify on the website or through communication with the e-marketplace’s customer service organization. A breakdown of the titles of the respondents in Figure 2 shows a very senior mix; those contacted rarely delegated the task of responding.

Figure 3 shows a diverse industry mix. About one third of the respondents support the industrial supply chain (the three slices positioned around 5 o’clock on the pie chart); one-quarter is broadly from the service sector (three slices positioned around 10 o’clock). The multi-industry category captures companies that do not focus on a single industry but work with buyers across a wide range of industries.

Although over two-thirds of the respondents are head-quartered in North America, the sample still provides a reasonable international perspective — at least for more developed regions. As shown in Figure 3, 42% of the respondents serve the global market and another 19% cover two or more regions.

Non-response bias presents a concern to any survey-based research and this study is no exception. Through our attempts to contact each potential respondent, we did gain some insight into the reasons for non-response. A few indicated each of the following: too busy to respond; targeted individual had left the company; company had been acquired; and ‘no longer in that business’. In about 5% of the cases, we found that the phone number provided on the website was no longer operational. Such findings suggest a potential non-response bias of failed or struggling companies; however, given our original intent to survey successful survivors, we can accept this form of bias without excessive concern.

We also looked for non-response bias based upon the pre-existing data we possessed on each company. As
shown in Figure 2, our response rate was quite consistent across regions indicating that headquarters location did not present a major concern for response bias. The response rates across the 24 industry classifications captured in the original database suggest little bias with the exception of slightly higher response rates from products-based industries versus services-based industries.

One concern we faced was incomplete responses. Although 49 of the 61 respondents included numbers for at least one of the two dependent variables, only 20 contributed both numbers. We made a comparison of the mean values of all independent variables among the full sample and each of the two subsamples responding on each dependent variable. There were no significant differences except for Ownership Structure, where only three of the nine consortium respondents provided data for the two dependent variables. For this reason, the results relating to Ownership Structure may be viewed as only preliminary. Otherwise the potential non-response bias is low, and not likely to be bested given the proprietary constraints from this type of research.

REGRESSION ANALYSIS OF CONCEPTUAL MODEL

Multivariate linear regression was employed to test two hypotheses derived from the conceptual model:

Hypothesis 1: Revenue drivers — Revenue is positively affected by: Service Breadth, Strategic Continuity, Initial Funding Ratio and Ownership Structure; and negatively affected by Execution Speed after controlling for Age.

Hypothesis 2: Profitability drivers — Time to First Financial Milestone is positively affected by: Service Breadth, Execution Speed, Initial Funding Ratio, Industry Concentration, Ownership Structure, and negatively affected by Strategic Continuity after controlling for Age.

Revenue drivers test

In testing hypothesis 1, we first examine the descriptive statistics for the key variables for the 29 respondents providing 2002 revenue data. As can be seen in Table 1, the average value of the dependent variable is 8.3 (in log terms) which equates to about $4 million in 2002.
Table 2. Revenue regression model

<table>
<thead>
<tr>
<th>Variable</th>
<th>ORIGINAL MODEL</th>
<th>PARSIMONIOUS SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( R^2 = 0.794 ) \hspace{1cm} Adj. ( R^2 = 0.717 )</td>
<td>( R^2 = 0.792 ) \hspace{1cm} Adj. ( R^2 = 0.729 )</td>
</tr>
<tr>
<td>Age</td>
<td>2.182 1.522</td>
<td>2.055 1.456</td>
</tr>
<tr>
<td>Service Breadth</td>
<td>-0.493 0.172</td>
<td>-0.483 0.167</td>
</tr>
<tr>
<td>Execution Speed</td>
<td>-0.114 0.057</td>
<td>-0.102 0.047</td>
</tr>
<tr>
<td>Strategic Continuity</td>
<td>2.095 0.496</td>
<td>2.084 0.485</td>
</tr>
<tr>
<td>Initial Funding Ratio</td>
<td>0.305 0.136</td>
<td>0.302 0.133</td>
</tr>
<tr>
<td>Ownership Structure</td>
<td>3.152 0.698</td>
<td>3.137 0.682</td>
</tr>
</tbody>
</table>

Among the independent variables, only the control variable, Age, shows a strong correlation to the dependent variable. Industry Concentration and Execution Speed also show a strong negative correlation between one another — suggesting that starting pilots is easier in an industry with fewer players versus one with many participants and that it may be best to exclude one of the two variables. Finally, consistent with expectations, the Service Breadth and Strategic Continuity are also correlated with each other at a 5% significance level — the t-statistics were used to test whether these variables could remain together in the model.

A regression model incorporating the control variable and the six independent variables yields an adjusted \( R^2 \) of 0.717, with an F ratio of 10.432 that is significant at 0.000. Examining the regression coefficients in Table 2 provides strong support for most elements of the first hypothesis. The left side of the exhibit shows the results of a regression with all of the variables cited in the conceptual model. As expected, the control variable, Age, is positively related to Revenue and significant at the 1% level or better. Strategic Continuity and Ownership Structure are both positively related and significant at the 1% level. The Initial Funding Ratio is positively related as expected and significant at the 5% level (3.7% to be precise). Execution Speed shows the expected positive relationship but at a less significant 6.2%. However, the lower significance of Execution Speed occurs due to a partial loading onto the Industry Concentration variable which proved to have no significant impact, as expected.

The right side of Table 2 shows the results of a more parsimonious model removing Industry Concentration, which was hypothesized to be insignificant and proved to be so. Its removal improves significance levels of most other variables, importantly improving that of Execution Speed to 4.4%, and raising adjusted \( R^2 \) to 0.729. Analysis of the residuals in both models shows the expected random patterns suggesting that the models comply with standard regression assumptions.

The one result inconsistent with our hypothesis is that Service Breadth relates negatively to Revenue (at a 1% significance level) rather than positively as anticipated in the conceptual model. Upon reflection, this suggests we may have underestimated the negative impact of a lack of focus — which we anticipated relative to time to profitability but not for revenue. By pursuing too many services, the e-marketplace may spread its efforts too thinly and not yield the expected revenue per service despite a broader range of services. Though not consistent with our original hypothesis, we now view this result as an important finding suggesting the value of focus in both revenue generation and profitability.

Profitability drivers

The regression model for profitability necessarily uses a somewhat different data set than that for revenue. While roughly 22% of the surveyed companies provided usable responses, many have not yet achieved key measures of financial success, and a few chose not to share potentially proprietary financial data. Ultimately 40 respondents provided the timing for at least one of the three financial milestones. As expected, positive contribution margin was the first milestone reached for a majority of the 40 respondents (33 to be precise). Positive cash flow marked the key financial milestone for another six respondents and breakeven for the last one. Analyses of these three milestones separately highlighted similar relative importance of the independent variables, but with less explanatory power due to the smaller sample sizes. Based upon this verification, we felt confident proceeding with our original plan to use the earliest milestone as the best means to capture the priorities of the different forms of e-marketplaces in the respondent pool.
Table 3 shows the descriptive statistics for the key variables for the 40 respondents. The average time to achieve the first financial milestone is just under 2 years (7.9 quarters). Execution Speed shows a positive correlation at the 1% significance level while Strategic Continuity shows a negative correlation, at the 5% level, with this dependent variable. There are two significant correlations among the independent variables. As in the prior sample of companies providing revenue data, Strategic Continuity is positively correlated to Service Breadth at the 5% level. Industry Concentration and Ownership Structure also exhibit positive correlation at the 5% level. Regression results supported keeping both of the first pair (their correlation was low enough to give significant individual t-statistics) and did not support the use of either of the second pair of variables.

Table 4 shows the results of regressions using all of the variables in the conceptual model as well as a parsimonious version employing only the variables that proved significant at the 5% level. Despite the larger sample size, the regression for Time to First Financial Milestone proves to have less predictive power based upon the adjusted \( R^2 \) and the \( F \) statistic. The regression model incorporating all six independent variables yields an \( R^2 \) of 0.441 and an adjusted \( R^2 \) of 0.321. At (6,28) degrees of freedom the model’s \( F \) ratio of 3.68 is significant at 0.008. An analysis of the residuals supports the assumptions required for regression.

It is not surprising that the statistical significance of this model is weaker than for the revenue model (for \( R^2 \), \( F \) and t statistics). Attaining profitability is more elusive than gaining revenues and time to profitability should be less predictable than revenue — particularly when employing the same set of independent variables. As shown in the left-hand side of Table 4, Execution Speed displays a strong, positive relationship to the dependent measure at a 0.1% significance level and Strategic Continuity shows the hypothesized negative relationship at a 2.9% significance level. Two more variables — Service Breadth and Industry Concentration — both display the expected positive relationship but prove significant only at 9.3% and 9.7% respectively. The Initial Funding Ratio and Ownership Structure variables fail to show statistical significance.

Table 3. Descriptive statistics: financial milestone respondents

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>N</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Time to First Financial Milestone</td>
<td>7.85</td>
<td>5.54</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(in quarters)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Service Breadth</td>
<td>2.98</td>
<td>1.56</td>
<td>40</td>
<td>0.100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Execution Speed</td>
<td>3.28</td>
<td>3.74</td>
<td>36</td>
<td>0.440**</td>
<td>-0.161</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Strategic Continuity</td>
<td>0.73</td>
<td>0.45</td>
<td>40</td>
<td>-0.345*</td>
<td>0.317*</td>
<td>-0.068</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) Initial Funding Ratio</td>
<td>6.83</td>
<td>1.70</td>
<td>39</td>
<td>0.012</td>
<td>-0.298</td>
<td>-0.130</td>
<td>-0.231</td>
<td></td>
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</tr>
<tr>
<td>6) Industry Concentration</td>
<td>1.75</td>
<td>1.39</td>
<td>40</td>
<td>0.148</td>
<td>0.292</td>
<td>-0.277</td>
<td>0.010</td>
<td>-0.082</td>
<td></td>
</tr>
<tr>
<td>7) Ownership Structure</td>
<td>0.05</td>
<td>0.22</td>
<td>40</td>
<td>-0.078</td>
<td>0.227</td>
<td>-0.117</td>
<td>0.141</td>
<td>0.069</td>
<td>0.376*</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Table 4. Milestone regression model

<table>
<thead>
<tr>
<th>Variable</th>
<th>( R^2 )</th>
<th>( F ) ratio</th>
<th>( R^2 ) adj.</th>
<th>( F ) adj.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Model</td>
<td>0.441</td>
<td>3.683</td>
<td>0.321</td>
<td>0.008</td>
</tr>
<tr>
<td>Parsimonious Solution</td>
<td>0.375</td>
<td>6.387</td>
<td>0.316</td>
<td>0.002</td>
</tr>
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</table>

<table>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.988</td>
<td>4.987</td>
<td>0.198</td>
<td>0.844</td>
<td>6.038</td>
<td>2.063</td>
<td>2.927</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td>Service Breadth</td>
<td>1.008</td>
<td>0.579</td>
<td>0.284</td>
<td>1.741</td>
<td>1.079</td>
<td>0.529</td>
<td>2.042</td>
<td>0.049</td>
<td></td>
</tr>
<tr>
<td>Execution Speed</td>
<td>0.796</td>
<td>0.223</td>
<td>0.538</td>
<td>3.563</td>
<td>0.682</td>
<td>0.210</td>
<td>3.253</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td>Strategic Continuity</td>
<td>-4.328</td>
<td>1.876</td>
<td>-0.354</td>
<td>-2.307</td>
<td>-5.014</td>
<td>1.805</td>
<td>-2.778</td>
<td>0.009</td>
<td></td>
</tr>
<tr>
<td>Initial Funding Ratio</td>
<td>0.383</td>
<td>0.507</td>
<td>0.117</td>
<td>0.755</td>
<td>0.371</td>
<td>0.358</td>
<td>0.371</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry Concentration</td>
<td>1.117</td>
<td>0.650</td>
<td>0.281</td>
<td>1.719</td>
<td>0.097</td>
<td>0.210</td>
<td>1.079</td>
<td>0.049</td>
<td></td>
</tr>
<tr>
<td>Ownership Structure</td>
<td>-3.584</td>
<td>3.944</td>
<td>-0.143</td>
<td>-0.909</td>
<td>0.371</td>
<td></td>
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</table>
The right-hand side of Table 4 shows the parsimonious model including only the variables that proved significant at the 5% level. The adjusted $R^2$ drops slightly to 0.316 but the F statistic for the model increases substantially to 6.39 for a 0.002 significance level at (3, 32) degrees of freedom. The significance levels of explanatory variables improved upon removing the extraneous variables. Execution Speed remains the most significant and improves to a 0.3% value. Strategic Continuity improved to 0.9% from its original significance level of 2.9%. Although it only achieved a 9.3% significance level previously, Service Breadth now proves significant at the 4.9% level. None of the remaining variables in the original model passed the 5% threshold significance test.

CONCLUSIONS

Our conceptual model, updated according to the understanding gained from the regression study is shown in Figure 4. It is a useful guide to managers operating B2B e-marketplaces as well as those considering the opportunity to join, invest in or procure from any of the remaining e-marketplaces.

In this study the variables with special significance relate to ownership, funding levels, speed and continuity, and to some extent the scope of service offering. The regression results suggest that consortia ownership provides an advantage to a B2B e-marketplace in achieving revenues but does not speed time to profitability. It also highlights that the e-marketplace should work to rapidly develop pilots and keep the service offering focused. The findings also suggest an interesting ‘leading indicator’ of a problem, namely an intention to reposition away from an original e-marketplace strategy. Despite the significant reduction in the number of B2B e-marketplaces, more failures are likely. Now we know more about what leads to success.

Our findings also suggest that B2B e-marketplaces can succeed in differing industry structures since industry
concentration proved relatively unimportant. Since this finding contradicts some of the prescriptive research (Brunn et al. 2002), we decided to explore further the effects of industry. We compared e-marketplaces across the industry groups displayed in Figure 3. For the most part, the variation was random across the industries, with a few notable exceptions. First, the B2B e-marketplaces serving the highly fragmented construction industry tended to be smaller and had received less funding per service. The transportation industry had the fastest average time to a financial milestone at only three quarters, while retail/consumer goods averaged 12 quarters. The e-marketplaces serving retail/consumer goods also had the broadest service offering on average — and yet were still the best funded on a per service basis. The limited impact of industry concentration should be interpreted with caution given that e-marketplaces serve a new, intermediary role in existing industries. Looking forward to our own future research, we anticipate more detailed analysis of e-marketplaces by industrial segment.

The consortia model was more prevalent in the energy and the retail/consumer goods industries where two of four and three of six respondents, respectively, indicated that ownership model. We had no consortia in any of the service-related industries (construction, transportation or general service industries) or in capital equipment or in public sector industries.

All of the variables play a role in one or the other of the models, lending support to aspects of each of the three schools of thought, Industrial Organization Economics, the RBV and Competitive Heterogeneity. Each independent variable was involved in the Revenue model, with the exception of Industry Concentration, as anticipated by our first hypothesis. Service Breadth, though significant, affected Revenue differently than we anticipated. A broad service offering lowered revenues rather than raising them, suggesting that focus is more important than we anticipated. This finding could also add support to aspects of each of the three theoretical base for e-marketplace performance.

Interestingly, the Time to First Financial Milestone model indicates that a focus on a small number of services speeds profitability — which lends support to a ‘core competence’ argument consistent with the RBV. Our work contributes additional learning in the continuing debate about the sources of superior sustained financial performance. It also fills a void in e-commerce research that has been explicitly identified. For example, Kauffman and Walden (2001) recommended that researchers ‘cultivate theory for the value and performance of B2B electronic markets’. This research, which we will continue from this exploratory stage, provides a solid foundation for the ongoing study of the rapidly changing arena of B2B e-marketplaces.

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References


