Exploring Strategic Choices in Marketplace Positioning

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ABSTRACT

We examine B2B e-marketplace designs and how these strategic choices affect both operating and financial performance. A theory-driven framework conceptualizes e-marketplaces as network orchestrators that create value by creating exchange opportunities, and facilitating economic and social exchanges. The locus of impact of e-marketplaces ranges from the network, where it accrues to all firms potentially participating in the exchange; to firm dyads, where the impact is based on specific transactions or relationships; to primarily impacting an individual firm. B2B e-marketplaces may impact information linkages (communication), value linkages (electronic integration and brokerage) or relational (social integration) linkages.

Findings based on an analysis of 194 surviving B2B e-marketplaces considered best in class suggest positioning on either transactional lines emphasizing scale, or relational lines emphasizing depth. E-marketplaces with a transactional focus are associated with greater prominence. As expected, horizontal (process) marketplaces draw higher traffic compared to more-focused vertical (industry) marketplaces, and e-marketplaces with resourceful sponsors also attract greater traffic. First-mover advantage was found to be significantly associated with both higher traffic as well as prominence. We also find that a relational positioning is more likely for e-marketplaces dealing with complex products while a transactional positioning is more likely for commodity products.

Keywords: electronic markets, e-commerce, interorganizational information systems

INTRODUCTION

B2B e-marketplaces are commerce sites on the public Internet that allow buyers and suppliers to connect, exchange information and transact business. They are typically characterized by many-to-many (potential) transactions, and utilize fixed pricing through multi-item catalogues or dynamic pricing through trading, auctions or requests for quote. This differentiates B2B e-marketplaces from the highly structured point-to-point interfaces for well-defined trading relationships in conventional Electronic Data Interchange (EDI). Internet-based marketplaces, employing auctions and other dynamic...
price discovery mechanisms, are now vying for shares of business activity across horizontal process sectors, vertical industry sectors, or geographical regions (Economist 1999). Dynamic pricing helps overcome the stickiness of menu prices — they may not adjust efficiently to reflect changes in supply or demand (Cramton and Shoham 2001). Aggregation of demand and supply through e-marketplaces helps to overcome search costs and inefficient pricing in fragmented industries (Le 2002).

There is no widely accepted taxonomy for B2B marketplaces, but there are emerging distinctions among 1) Auctions — purchase and sale of unique items e.g., freemarkets — reverse auction for manufactured inputs; 2) Exchanges — spot markets for commodities e.g., Altra for natural gas; and 3) Community market makers — that bring professionals with common interests together e.g., VerticalNet. Other important characterizations distinguish between vertical and horizontal product offerings, as well as systematic and spot sourcing of operating versus manufacturing inputs (Kaplan and Sawhney 2000).

We consider it an imperative to examine the design of these marketplaces because they have the potential to shape emergent value chain structures. A new breed of companies, so-called ‘market-makers’, are emerging to develop and run these marketplaces (Merrill Lynch 2000). While B2B e-marketplaces are still in an early stage and evolving, their potential is enormous (Lennstrand et al. 2001). In the words of technology vendor, Ariba, ‘Ultimately all businesses will buy on a marketplace, sell on a marketplace, host a marketplace or be marginalized by a marketplace’ (Ariba 2000).

In the recent past, projections for commerce to be transacted through B2B e-marketplaces had been glowing. The Gartner Group projected that $7.2 trillion in transactions would occur by 2003 and we would see as many as 7,500 to 10,000 marketplaces by 2002 (Gartner 2000). With the current economic downturn, there has been a significant disenchantment with B2B e-marketplaces. There have also been some very significant failures, such as the Dell marketplace for office equipment that could not attract suppliers despite the clout of its sponsor. One of the main concerns has been that e-marketplaces may have tried to impose ‘unnatural’ business models on participants. While progressive thinking and research on buyer — supplier relationships advocate collaborative linkages, a number of e-marketplaces have tried to extract value by pitting suppliers against other suppliers in price-based competition — thus drawing hesitant participation from suppliers in public exchanges (Zenger and Hesterly 1997). It has also been proposed that an unsustainable glut of competitors was attracted by rosy growth forecasts and promises of exceptional returns, and the entrants often were naïve about the realities of competition and barriers to entry (Day et al. 2003). However, there is a lack of empirical studies that would provide substantive insights for managers and researchers. Past studies have specifically suggested a careful examination of the core logic underlying how a firm creates value and how that logic is manifested through the firm’s value proposition to assess its prospects. While we use the label e-marketplace for these institutional arrangements and infrastructures, we do not imply a specific governance structure. E-marketplaces may support market governance (price as control), hierarchical governance (administrative authority as control) or network/hybrid governance (mutual gain, reciprocity, interdependence, relational norms as control). Participants may enact different governance structures within the same e-marketplace (Amit and Zott 2001).

It would, therefore, be valuable to explore the positioning of the extant B2B e-marketplaces and examine its impact on e-marketplace success. This study poses the following research issues:

1. What strategic choices are available to e-marketplace operators to position their e-marketplace?
2. How do these choices impact their performance?

The remainder of this paper is organized as follows. In the next section we develop a theoretical basis for e-marketplace value propositions. We then outline our research model and propose hypotheses dealing with e-marketplace value proposition choices and market design choices. This is followed by a discussion of our methodology and construct operationalization. Next we present the empirical evidence illustrating how these strategic choices are associated with e-marketplace performance. We close with a discussion of the implications of these findings.

E-MARKETPLACE VALUE PROPOSITIONS

The transactional advantages of e-marketplaces and the elimination of geographical barriers enjoy the spotlight, but e-marketplaces also serve an important role in catalyzing business relationships and partner discovery. They serve as platform applications that enable complex inter-organizational processes to be designed and supported. A major benefit of B2B marketplaces lies in providing a framework for scalable, dynamic interenterprise process integration. Industry e-marketplaces may also allow participants to share industry information, current trends and best practices, identify and profile potential business partners, link up with industry buyers and suppliers, and facilitate creation of consortiums of organizations to leverage aggregate spending. We propose that B2B e-marketplaces essentially enable high levels of loosely coupled coordination among enterprises.

The network orchestration perspective

In this study, we view the e-marketplace infrastructure from a network orchestration perspective. Orchestration
Network exchange theory

Social exchange theory explains behaviour based on a calculus of exchange of material and information resources (Blau 1964; Homans 1950). While the original formulation of this theory was to predict the formation of dyadic relationships based on the resources that each actor had to offer, subsequent refinement suggested that these conditions needed to be interpreted in the context of the larger network in which the dyad was embedded. Network exchange theory refers to the development of a perspective that an actor’s power to bargain is a function of the extent to which they are vulnerable to exclusion from communication and other exchanges within the network (Cook 1977; 1982; Cook and Yamagishi 1992). Actors forge network links on the basis of their analysis of the relative costs and returns on investments and maintain these links based on the frequency, the uncertainty, and the continuing investments to sustain the interaction. Given that B2B e-marketplaces offer a pathway to support exchanges for actors that may be otherwise excluded from the network, they enhance their power and create value for them (e-marketplaces may also adversely affect organizations that hold greater power with respect to organizations vulnerable to exclusion from networks). Since people, groups and organizations have power to the extent that they have access to alternate sources of a valued resource, and the extent to which they control resources valued by others in the network, B2B e-marketplaces have the potential to shift power relations and thereby create value for actors that now have access to alternate resources or are able to secure a market for resources that they control.

Interorganizational networks may be viewed as a political economy (Benson 1975). Interorganizational communication and exchange networks are the mechanisms by which organizations acquire and dispense scarce resources, thus creating and perpetuating a system of power relations. Organizations are dependent upon their positions in the network, which subsequently influence their ability to control the flow of scarce resources. Orchestrators such as e-marketplaces serve to create value by disrupting an existing system of power relations.

Enterprises are part of an ambiguous, complex and fluid configuration of firms that constitute a network and they develop network identities (Hakansson and Johanson 1988). Network identities capture the perceived attractiveness (or repulsiveness) of a firm as an exchange partner due to its unique set of connected relations with other firms, links to their activities and ties with their resources. It refers to how firms see themselves in the network and how they are seen by other network actors. Orchestration can be better supported by organizations with strong network identities that possess a high level of competence in enabling collaborative relationships. It is viable because of network effects that allow them to leverage resources from one context to another.

Orchestration has come into greater prominence as economic activity is converging toward exchange involving either internal or external networks of small, autonomous production or service units (Zenger and Hesterly 1997). This is enabled by resource transferability — the extent to which knowledge and solutions are transferable across relationships, activity complementarity — the value of the outcomes from activities undertaken in connected exchange relationships may be contingent on activities performed in other relationships, and actor-relationship generalizability — cooperation with a certain actor may have broader implications for relationships with other actors (Anderson et al. 1994). Also, because organizational networks distribute business functions among firms that are functionally specialized and managed by informal authority structures, orchestrators can play important roles in enabling interorganizational coordination and conflict management. The growing
salience of orchestrators is further driven by the progress of information and communication technologies, which lowers the cost of transactions conducted with specialized partners rather than within the enterprise.

Malone et al. (1987) suggest that IT has three potential effects on transactions with external parties — the communication effect (efficient information flow), the brokerage effect (efficient matching of buyer needs with seller offerings), and the integration effect (tightened process couplings). We extend this view by conceptualizing the role of e-marketplaces as orchestrating three types of network linkages that create value for their participating organizations in three distinct ways:

- orchestration of information linkages that result in improving information exchange and the processing of information;
- orchestration of value linkages that result in improving transactional characteristics that drive change in firm organizing; and
- orchestration of relational linkages that result in improving social relationships and make available resources embedded in these relationships.

This categorization resonates with the categories of generic IT impact developed by Wigand (1997) that categorized the effects of IT into the communication effect (more information conveyed in less time), the electronic integration effect (tighter linkages), the electronic brokerage effect (bring together needs/sources) and strategic networking (bring together linkages).

We propose that B2B e-marketplace operators may choose to position their marketplaces on the basis of the distinctive value propositions they offer — informational, transactional or relational. Consider the following positioning statements from e-marketplace operators:

**Informational** (Agribuys): We do not believe in the pure ‘exchange’ model, as it focuses only on the transaction, missing the possibility of process cost savings across the organization from the front office in terms of demand forecasting and decision support to the sales office, the warehouse, shipping, and accounting functions. The exchange model is about price discovery only, but food procurement efficiencies lie in the process much more than in the cost of product. **Integration** is a key to achieving these potential efficiencies.

**Transactional** (Tradeweb): [We provide] Unmatched access to the pooled liquidity of the largest bond dealers including — Credit Suisse First Boston, Goldman Sachs, Lehman Brothers, Merrill Lynch, Salomon Smith Barney. Request live, executable prices for your trade inquiry from multiple dealers simultaneously.

**Relational** (TradeMatrix): Open Commerce Network (OCN) is a collaborative network where buyers, suppliers and marketplaces can rapidly connect to each other in order to collaborate and conduct commerce. TradeMatrix OCN provides a single point of connection across a wide range of B2B platforms and technology standards to facilitate the creation of collaborative communities that drive increased visibility, velocity and value throughout the entire value chain.

We further describe the impact of B2B e-marketplaces with three categories defining the locus of impact:

- The impact that manifests itself primarily at the **firm level** and where the locus is internal to the firm;
- The impact that manifests itself primarily at the level of **inter-organizational dyads**; and
- The impact that manifests itself at the level of the **network of firms** that could potentially participate in the marketplace.

While impacts at a firm or dyad level are relatively well studied in previous research on EDI (e.g., Clemons and Row 1993; Johnston and Vitale 1988), the network level effects are not given due attention. While e-marketplace infrastructure benefits at the firm level sound counter-intuitive and the systems may not be well suited and designed for firm-level impacts, these are often cited as important benefits of e-marketplaces. Procurement markets often tout the gains from reduction of maverick buying by different functional areas and consolidation of spending that can be achieved at the firm level. Also, internal process streamlining is a benefit for organizations that may not have structured processes to begin with. Firm and dyad-level effects continue to be significant in e-marketplaces as well: ‘[chematch] streamlines and automates the purchasing process, distributes purchasing power to authorized users, standardizes buying methods, controls overall spending and leverages corporate purchasing to negotiate better deals.’

However, in e-marketplaces the network effect is crucial: ‘Each time Ariba or Commerce One plugs a new corporate customer into its marketplace, such as Chevron signing on with Ariba, the customer brings hundreds of its suppliers onto the network. These suppliers are then available to any other company that plugs into the network …’ The network level impacts primarily differentiate B2B e-marketplaces from earlier connectivity infrastructure such as EDI.

The value propositions (Figure 1) suggest an increasing level of effects, from the firm to the network level, which can benefit firms participating in the B2B marketplace. The marketplace itself may be assessed using some key metrics, including the traffic at the site representing the marketplace and the number of links from other sites to the marketplace. Traffic is a strong representation of the number of potential market participants. Links into the marketplace can benefit firms participating in the B2B marketplace.

The following section develops our conceptual model identifying relationships among value proposition choices, market design choices and operating and financial performance in the B2B marketplace.
CONCEPTUAL MODEL AND HYPOTHESES

We propose that the performance of B2B e-marketplaces will be related to their strategic choices in terms of the distinctive value propositions that they choose to offer and the design of the market mechanisms that are put in place (Figure 2). These strategic choices will impact the value perceived by e-marketplace participants as they enhance the opportunity for exchanges of valued resources. This is expected to result in higher operational performance of the e-marketplaces, which, in turn, will be reflected in their performance. In our research model we include control factors such as resource endowment, time online and vendor operation which are expected to impact e-marketplace performance, but which lie outside the control of an operator and cannot be strategically chosen. The following sections present the hypotheses underlying our research model.

A. Value proposition choice

Informational impact. A B2B e-marketplace may be viewed as an information processing mechanism (Galbraith 1973; Wigand 1997) that augments the information processing capacity of an organization. This is expected to manifest itself in the form of transparency of processes within an enterprise, especially enabling functional integration. It is also likely to manifest itself in visibility across supply chain linkages. Finally, it is expected to lead to network effects such as the improved discovery of counterparties to trade and collaborate with as well as dissemination of prices.

Within an organization, IT, in general, is expected to enhance the quality and timeliness of organizational intelligence and decision making by providing employees with easy and flexible access to stored and current information (Huber 1990). IT is also expected to promote learning, allow for easy exchange of know-how and facilitate problem solving. B2B e-marketplaces are likely to improve an organization’s access to information. Also by supporting an organization’s buying or selling processes, these are likely to provide the infrastructure for an enterprise’s information processing.

The lack of real-time information flow in the supply chain has been shown to lead to an important manifestation — the so-called ‘bull-whip effect’ — demand order variabilities in the supply chain are amplified as they moved up the supply chain. Inventory researchers have recognized that multi-echelon inventory systems can operate better when inventory and demand information from downstream sites is available upstream (Shapiro and Varian 1999). Better demand information has been found to result in a reduction in the need to store inventory to guard against demand fluctuations.
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**A. value proposition choice**

- Informational benefits
- Transactional benefits
- Relational benefits

**Operating performance**

- Exchange traffic

**B. Market Design Choice**

- Market focus

**C. Controls**

- Resource endowment
- Time online
- Vendor-operator

**Figure 2. Research model**

*Transactional impact.* It has been proposed that IT can reduce coordination costs relative to production costs (Malone *et al.* 1987), reduce asset specificity and mitigate problems of moral hazard (Clemons and Row 1993). Information systems reduce search costs for buyers — lead to efficiency in intermediation and indirect gains through better allocations (Bakos 1991). Reduction in buyer search costs also leads to change in the relative market power of buyers and suppliers.

The impact of EDI technology on transactional efficiency has also been well established (Francalanci and Maggiolini 1999). Two important elements of the potential gains from using EDI are faster response time to process the document and increased data integrity, both of which result in an overall reduction in the cost of performing the transaction (Mukhopadhyay *et al.* 1995). Shipment data in the automobile industry has shown that shipment performance degrades substantially due to increases in part variety and trading partners from diverse industries. However, investments in information technology to support both the sharing of JIT schedules and the establishment of integrated information links are related to significant reductions in the level of shipment discrepancies. The analysis of a decade of performance data at Chrysler’s assembly centres (Mukhopadhyay *et al.* 1995) shows that EDI enabled Chrysler to significantly reduce operating costs associated with carrying inventories, obsolescence and transportation. Effective use of information to coordinate material movements by Chrysler and its suppliers has resulted in significant savings estimated at over $100 per vehicle, while controlling for changes in factors such as parts variety, engineering changes and volume.
Empirical studies have further validated the impact of electronic markets on transaction costs. In marketplaces, effects have been seen on prices, the role of brokers and inventory levels (Choudhury et al. 1998). The e-marketplace helps buyers find a better price, in other cases it helps suppliers extract an extra premium by providing more accurate information on parts availability.

**Relational impact.** The third impact of B2B e-marketplaces is to transform the nature of social relationships within and between organizations. Interorganizational systems (IOS) make possible relationships that have characteristics of both markets and hierarchies. Economic variables are tempered by individual firm strategies reflecting investment, network structure and IOS choices (Holland and Lockett 1997).

An emerging theme in strategy theory has been the shift in focus from the theme of value appropriation to one of value creation (Ghoshal and Moran 1996). Social capital refers to the actual and potential resources embedded within, available through and derived from the network of relationships possessed by a social unit. The role of social capital in facilitating the combination and exchange of intellectual capital and the creation of new intellectual capital is recognized as critical (Nahapiet and Ghoshal 1998). Three dimensions of social capital have been proposed. The structural dimension refers to the overall pattern of connections between actors in the social system. The facets of this dimension are the presence or absence of network ties, network configuration and appropriable organization — networks created for one purpose may be used for another. The relational dimension refers to facets such as trust and trustworthiness, norms and sanctions, obligations and expectations and identity and identification. The cognitive dimension refers to the resources providing shared representations, interpretations and systems of meaning among the actors. A B2B e-marketplace may help in the augmentation of social capital by facilitating the formation of network ties, by instituting an environment for shared cognitive structures to take root, and by providing institutional mechanisms to assure trustworthiness. The marketplace would also create an embedded social network as it becomes an important source of information for firms about the reliability and capabilities of their current and potential partners, helping firms to learn about new tie opportunities and also enhancing their trust in current and potential partners (Gulati 1995; 1998).

According to the weak-tie theory (Granovetter 1973), distant and infrequent relationships (i.e., weak ties) are efficient for knowledge sharing because they provide access to novel information by bridging otherwise disconnected groups and individuals in an organization. Strong ties, in contrast, are likely to lead to redundant information because they tend to occur among a small group of actors in which everyone knows what the others know. IT such as B2B e-marketplaces enable the formation and sustaining of weak-tie linkages. While the motivation of organizational members to provide information through these linkages may be low, cultural conditions such as increase in personal esteem, identification with organization, respect from others and feeling of commitment fostered through shaped norms may encourage such activity.

The literature supports all three benefit types (informational, transactional and relational). Further, dyadic benefits and network-level benefits are expected to be valued progressively higher as they signal incremental exchange opportunities across enterprises. Thus:

H1. B2B e-marketplaces that are positioned to offer higher order information, transactional, and relational benefits will be associated with greater prominence and higher traffic.

**B. Market design choice**

One of the important characterizations of e-marketplaces is whether they focus on horizontal processes or vertical industry sectors (Kapan and Sawhney 2000). A horizontal process oriented e-marketplace is expected to support broader exchange opportunities because it can draw upon multiple industries. While horizontal exchanges are likely to have greater scale, vertical e-marketplaces are likely to focus on a narrow segment of firms for participation, thereby restricting exchange opportunities. Therefore, we expect that:

H2. B2B e-marketplaces that are designed to support horizontal process segments will be associated with greater prominence and higher traffic than those designed for vertical industry segments.

**C. Controls**

**Resource Endowment.** The resource-based view of the firm (Barney 1991; Peteraf 1993; Teece et al. 1997) suggests that resources are distributed heterogeneously across firms, and these productive resources cannot be transferred from firm to firm without cost (i.e., resources are ‘sticky’). Competitive advantage is derived in large part from internal, firm-specific resources and capabilities. The manner in which a firm’s resources and capabilities are acquired, developed, and deployed by its managers defines the firm’s relative competitive position, and the sustainability of that position depends on the ease with which competitors can imitate or replicate the firm’s acquisition, development and deployment of those resources and capabilities. It is expected that for e-marketplace operators, access to financial resources, knowledge and relational resources through their sponsor organizations is vital to enable them to develop and deploy the e-marketplace infrastructure and then draw a critical mass of participation. Hence:
H3. B2B e-marketplaces that are endowed with differentiated resources through resourceful sponsors will be associated with greater prominence and higher traffic.

Time online. B2B e-marketplaces are also characterized by network externalities — the benefit to an individual trader of any trading system increases with the number of traders who use it (Shapiro and Varian 1999). The presence of network externalities raises barriers to entry for new e-marketplaces, which, at least at the beginning, do not have the same level of volume as existing ones. This means that incumbents have a built-in, first-mover advantage that is difficult for entrants to overcome. Further, e-marketplaces are expected to have increasing returns to scale, decreasing average costs of service provision as quantities transacted increase and demand-based economies of size. Thus participants will tend to choose the competitor with the largest size. Entry into nascent B2B e-marketplaces may also be characterized as real options, since early entry into these markets would permit strategies not available to late entrants (Croson et al. 2001). Hence, we propose that:

H4. B2B e-marketplaces that have first-mover advantage will be associated with greater prominence and higher traffic.

Vendor-operator. Vendor-operator refers to B2B e-marketplaces that are operated by prominent vendors of the software that forms a basis for these IT systems. It is proposed that these companies have key IT capabilities based on their understanding of the platform that will allow them to differentiate themselves. Further, they could be expected to be more aware of technology developments, more skilled in using and customizing them to their specific conditions and also more likely to want to be seen on the cutting edge. In past initiatives, such as Quick Response in specialty retailing, IT expertise has been found to be critical for technology deployments (Palmer and Markus 2000). Hence, we propose that:

H5. B2B e-marketplaces that are software vendor operated will be associated with greater prominence and higher traffic.

RESEARCH METHOD AND CONSTRUCT OPERATIONALIZATION

This study is based on data gathered from primary and secondary sources. The sample of B2B e-marketplaces for this study is based on a list produced by Forbes magazine that rates some B2B firms as ‘Best of the Web’ in different industry categories. We started with the Forbes lists for years 2000 and 2001. These were then screened for companies that were no longer functioning as independent entities. This left us with a sample of 194 B2B e-marketplaces. This sample is biased towards the more successful companies in their space, but we still find substantial variation in value propositions and market design choices, as well as representation across different industry sectors. The reason for going with the surviving e-marketplaces is because of related research that suggests that there is a high level of ‘crowdedness’ in this space because of enterprises investing in building real options, with clear expectations of an ultimate shakeout (Croson et al. 2001). Thus, a focus on the more successful e-marketplaces is expected to eliminate dysfunctional strategies that may cloud our analysis.

The data for the study are derived from primary evaluations of corporate websites, financial databases and direct company sources. An attempt was made to contact all companies in our sample through email and phone. A subset of companies was contacted to complete a detailed survey instrument eliciting their marketplace positioning.

Data for positioning are based on a primary evaluation conducted on the value propositions presented on the corporate website. The scale for each dimension — informational, transactional and relational, follows from the value proposition framework (Figure 1). Two researchers independently extracted the value proposition ‘text’ at the e-marketplace operator website and then coded them as per a rigorously defined scale. The independent evaluations were then reconciled to ensure that they met the scale guideline. The value propositions articulated by an e-marketplace may reflect an explicit positioning strategy or an implicit/emergent positioning without strategic intent. We believe that, in either case, these reflect how the e-marketplace presents itself to its participants and this would, in turn, guide their features and organizational practices.

Our analysis includes the use of Alexa to identify the site traffic and number of links to the site. Alexa measures the largest, most geographically and demographically diverse sample of overall web usage currently available. The number of ‘Links-In’ is an indication of prominence. Links-in is the number of different Web pages that link to this particular website. Alexa retrieves contact information from official Internet Registration organizations around the world such as InterNIC and RIPE and from individual website and home page owners. Alexa analyses the data received from continually updated snapshots of the Web, identifying how a site’s traffic ranks in comparison to other websites and how many other sites link to that site. Table 1 summarizes the operationalization of constructs and data sources.

RESULTS

Our data collection resulted in results for 194 established electronic marketplaces. These markets covered a variety of industries including agriculture, automotive, energy, media, office supplies and telecommunications. The average e-marketplace was set up around 1998 (time online data represents offset from base year 1988) with 66% in industry verticals and 33% vendor-operated.
Table 2 provides a correlation matrix for the variables. Significant correlations are evident among the dependent variables of prominence and traffic and the independent variables of transactional and market focus. In addition there is a significant correlation between prominence, traffic, and the control variables of time online and vendor-operator.

Table 3 provides a map of the e-marketplace positioning landscape. It is apparent that most e-marketplaces tend not to position themselves to emphasize relational benefits. Also, most e-marketplaces emphasize firm-level benefits rather that higher order benefits.

To more fully analyse the relationships among the variables, we developed linear regression models. Table 4 presents the fitted parameters for linear regression models based on our proposed hypotheses. Two OLS regression models were tested — the first one with e-marketplace prominence as the dependent variable and positioning choices as the antecedents, the second model with e-marketplace traffic as the dependent variable.

The results in Table 4 confirm some of our hypotheses but, more importantly, suggest a nuanced view of some of the antecedents that we proposed. While both e-marketplace prominence and traffic are correlated on an overall basis, some of the antecedents affect the two variables in different ways. For instance, vendor-operated e-marketplaces are more prominent but have lower traffic. On the other hand, e-marketplaces with resourceful sponsors tend to attract greater traffic. As expected, vertical e-marketplaces have lower traffic than horizontal e-marketplaces that can seek broader participation.

In order to conduct an analysis of the contingency conditions that explain the choice of market positioning, we coded the industry for each marketplace into two categories: commodity products and complex products. We also separated the market focus into either horizontal (process) or vertical (industry) exchanges. This gives us the following categorization of our B2B e-marketplace population (Table 5):

A one-way ANOVA conducted for the positioning variables with cluster membership as the factors showed that there were significant differences in positioning across these clusters (0.05 level). Differences between groups were found to be significant for informational,
Table 2. Correlations matrix

<table>
<thead>
<tr>
<th></th>
<th>(a)</th>
<th>(b)</th>
<th>(c)</th>
<th>(d)</th>
<th>(e)</th>
<th>(f)</th>
<th>(g)</th>
<th>(h)</th>
<th>(i)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Exchange prominence</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(Log Links-In) Traffic Rank</td>
<td>0.686**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Exchange traffic (Log Traffic Rank)</td>
<td>0.068</td>
<td>-0.062</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Informational</td>
<td>0.224**</td>
<td>0.134</td>
<td>0.170*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Transactional</td>
<td>-0.048</td>
<td>-0.125**</td>
<td>0.177*</td>
<td>0.038</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Relational</td>
<td>-0.252**</td>
<td>-0.234**</td>
<td>-0.100</td>
<td>-0.190**</td>
<td>-0.014</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Market focus – Horizontal/Vertical</td>
<td>-0.104</td>
<td>0.055</td>
<td>0.130</td>
<td>0.054</td>
<td>0.078</td>
<td>0.075</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Resource endowment</td>
<td>0.388**</td>
<td>0.298**</td>
<td>-0.157*</td>
<td>0.035</td>
<td>-0.111</td>
<td>-0.166*</td>
<td>-0.193*</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>(h) Time online</td>
<td>0.307**</td>
<td>0.201**</td>
<td>0.047</td>
<td>0.084</td>
<td>0.205**</td>
<td>-0.211**</td>
<td>-0.021</td>
<td>0.080</td>
<td>1.000</td>
</tr>
</tbody>
</table>

+ - 0.10 level of significance (2 tailed)
* – 0.05 level of significance (2 tailed)
** – 0.01 level of significance (2 tailed)

Table 3. Value-based positioning

<table>
<thead>
<tr>
<th></th>
<th>Not positioned on this dimension</th>
<th>Firm</th>
<th>Dyad</th>
<th>Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational</td>
<td>33 (17%)</td>
<td>82 (42.3%)</td>
<td>29 (14.9%)</td>
<td>50 (25.8%)</td>
</tr>
<tr>
<td>Transactional</td>
<td>34 (17.5%)</td>
<td>85 (43.8%)</td>
<td>Integration – 24 (12.4%)</td>
<td>41 (21.1%)</td>
</tr>
<tr>
<td>Relational</td>
<td>122 (62.9%)</td>
<td>20 (10.3%)</td>
<td>23 (11.9%)</td>
<td>29 (14.9%)</td>
</tr>
</tbody>
</table>

Table 4. Model results

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1) e-marketplace Prominence</th>
<th>(2) e-marketplace Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>7.475**(0.544)</td>
<td>9.860**(0.713)</td>
</tr>
<tr>
<td>Informational benefits</td>
<td>0.140(0.094)</td>
<td>-0.013(0.124)</td>
</tr>
<tr>
<td>Transactional benefits</td>
<td>0.157**(0.072)</td>
<td>0.048(0.095)</td>
</tr>
<tr>
<td>Relational benefits</td>
<td>-0.081(0.088)</td>
<td>-0.274*(0.114)</td>
</tr>
<tr>
<td>Market focus – Horizontal/Vertical</td>
<td>-0.286(0.231)</td>
<td>-0.625*(0.302)</td>
</tr>
<tr>
<td>Resource endowment</td>
<td>0.008(0.099)</td>
<td>0.279*(0.133)</td>
</tr>
<tr>
<td>Time online</td>
<td>0.0007**(0.000)</td>
<td>1.698**(0.491)</td>
</tr>
<tr>
<td>Vendor-operator</td>
<td>2.164**(0.592)</td>
<td>-1.804*(0.774)</td>
</tr>
<tr>
<td>N</td>
<td>171</td>
<td>169</td>
</tr>
<tr>
<td>Overall Model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.28</td>
<td>0.18</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.25</td>
<td>0.13</td>
</tr>
<tr>
<td>$F$- Statistic</td>
<td>7.998***</td>
<td>3.962***</td>
</tr>
</tbody>
</table>

* – 0.05 level of significance
** – 0.01 level of significance
relational and transactional positioning. The differences that are statistically significant (0.05 level) as per Tukey’s post-hoc tests are indicated through double arrows in Table 6.

Our results suggest that transactional and relational value propositions represent fundamentally different industry thinking on how value is to be derived from the use of e-marketplaces. The transactional value proposition is more suited for commodity products and a key imperative is driving market liquidity by aggregating demand and supply. The relational value proposition is more suited for complex products and the key imperative is to create value by allowing for seamless collaboration. Table 7 summarizes the findings on our initial hypotheses.

### DISCUSSION AND IMPLICATIONS

The findings suggest that the research model has identified several key factors that differentiate e-marketplace designs. Recent theoretical work on e-marketplaces suggests the need to take into account the network relationships among participating entities, and especially, include collaboration and relational contracting in analyses, as transaction cost explanations have typically focused on the communication and brokerage impacts (Christiaanse and Markus 2002). Conceptualizing an e-marketplace as an orchestrator of network linkages provides fresh insights into how these institutions may position themselves. The initial value proposition framework is generally validated by our findings.

Firms that emphasize transactional benefits would be expected to use the e-marketplace to get better price information and force counter-parties to compete on price. Thus, it is also expected that the transactional gains would best apply to commodity products with low asset specificity. It is apparent that such e-marketplaces would take on some of the more sophisticated trading features of financial exchanges.

Firms that emphasize relational benefits would, on the other hand be likely to use the exchange to use...
the e-marketplace for collaborative process integration. Thus, our findings suggest that relational benefits would best apply to more complex products with high asset specificity.

This idea of tying B2B approaches to the kind of product transaction has been labelled the ‘third wave’ of B2B e-marketplaces (Berryman and Heck 2001). Companies purchasing a commodity are expected to value the liquidity, the transparency and the price-orientation of the online bourse, while companies making specialized purchases might value the possibility of customization offered by relational contracting between buyer and seller.

Surviving e-marketplace operators also appear to be evolving their positioning across time and moving on to offer higher order benefits. The initial foundation of informational and transactional services are expanded to include both financial processing and logistics services at the end of the second year of operations. Our findings on market focus and product contingencies confirm that B2B e-marketplaces are indeed trying to match their positioning choices to their industry conditions. For complex products, e-marketplaces tend to emphasize informational and relational value propositions — greater value is derived through collaborative processes. For commodity products, transactional value propositions are emphasized — value is created through efficient price discovery. In vertical markets for commodity products, market structures that are oriented towards dynamic price discovery through auctions are more prevalent.

The recent failure of a number of e-marketplaces has been ascribed to the fact that they impose an unnatural business model and try to commoditize unique relationships. Thus, it is important to recognize whether the organization’s fundamental business model and supply chain relationship modes are aligned with the e-marketplace and are reflected in its form and structure. Experience with other technologies has also shown that technology adoption requires changes in complementary factors such as a change in business processes in order to provide the requisite benefits from the adoption. The low variance explained for the dependent variables in the model suggests that there are other factors that may be important to consider. In this research we have only considered the positioning choices that the e-marketplaces could make, but it is obvious that execution on these proposed positioning variables would be critical. Further, it is important to emphasize the nascent stage of most of these e-marketplaces.

This study provides implications for both research and practice. For researchers, it provides a stepping-stone for further studies that build more nuanced models of e-marketplace positioning and execution. It also broadens the conceptualization of an e-marketplace from its transactional connotations to an abstraction that includes its collaborative and informational roles. For practitioners, it sensitizes them to strategic choices that are available to them — choices they may be making implicitly. It also provides a first glimpse into the choices being made by the best-run e-marketplaces.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

It is important to emphasize that because B2B e-marketplaces are still in their infancy, there is a great deal of uncertainty about what operating models will be successful (Croson et al. 2001). In the course of this study, we have found significant merger and acquisition activity as well as corporate failures. This study is, therefore, only a snapshot of a rapidly changing landscape — but we hope that subsequent research can build on this foundation and provide confirmation of some of our hypotheses.

This study has used data for the e-marketplace website traffic and links-in as proxies for e-marketplace operating performance. Further research and intensive data collection is needed to confirm these results with data from market participants. The current shakeout being witnessed in e-marketplaces can also be investigated in terms of the network exchange theory. A glut of competitors may be drawn by relatively low entry barriers and with an eye towards creating options on future opportunities, without a clear understanding of the marketplace or others that may be poised to enter at the same time. Future research can investigate if the e-marketplaces that survive over the longer term are indeed the ones that create non-redundant linkages. This would require a fine-grained industry analysis to establish the impact of e-marketplaces on existing exchange structures.

CONCLUSION

In this study we have conceptualized B2B e-marketplaces in network exchange theoretic terms to provide a sound basis for their positioning. They allow enterprises that are vulnerable to network exclusion to enhance their opportunities for economic and social exchanges with other enterprises:

- **Value Linkages:** B2B e-marketplaces affect transaction characteristics and reduce consequent problems such as adverse selection, moral hazard, cheating and holdup, thereby reducing the costs of transactions in exchanges and improving flexibility.
- **Relational Linkages:** B2B e-marketplaces affect relationship characteristics such as dependence, commitment, power, trust and conflict, thus making social relationships possible.
- **Information Linkages:** B2B e-marketplaces improve information sharing and consequently affect firm resource allocations, supply chain performance and network diffusion.
Our empirical results demonstrate that the success of the e-marketplace hinges on how well it is able to position itself to offer higher order benefits sought by its participants.

References