

Successful e-marketplaces: An institutional perspective

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Abstract. Since their inception, e-marketplaces have witnessed a major shakeout and have undergone tremendous change with regard to their business models and products/service offerings. Only a few marketplaces survive, tend to grow and consolidate in this turbulent environment. This development represents an interesting challenge to prevailing institutional theory, which views the performance of organizations as strongly influenced by the orientation and characteristics of a number of key institutional frameworks. Our research, based on a case survey methodology, attempts to identify the characteristics underlying successful e-marketplaces. Results indicate the success of a marketplace strongly influenced by number of key institutional frameworks and firm-level strategies. Ownership and bias, service focus, value impact, market opaqueness, rapidity of response, complementary assets and appropriability, and industry regulations emerge as key variables.

Keywords. e-Marketplace; success; industry and firm characteristics.

1. Introduction

The broader business adoption of the Internet laid the foundation upon which B2B marketplaces evolved (Moreton & Chester 1996). An e-marketplace brings together multiple buyers and sellers enabling them to buy and sell from each other at a dynamic price that is determined in accordance with the rules of the exchange. As an economic institution, e-marketplace facilitates the exchange of information, goods, services, and payments, and provides an infrastructure – defining protocols and processes that rule the interaction. B2B (business-to-business) marketplaces can be broadly classified into public/independent, private and consortia marketplaces. Between mid-1998 and mid-2000, nearly 1,900 public e-marketplaces (1,500 independent and 287 industry-sponsored) were formed across the world (Deloitte Research 2000). In the early stages, business models in the B2B arena grew as exchanges in the typical form of neutral market makers. These were privately owned, third-party intermediaries that exploited the internet infrastructure to provide buyer–seller matching within a specific industry (Kaplan & Sawhney 2000). Vertical e-marketplaces optimize buyer–seller relationships in a specific industry, such as chemicals, metals, energy, and telecommunications. Horizontal marketplace makers facilitate the purchase and sale of goods and services used by a range of industries. They cut across industries to optimize specific functions in an enterprise, including human resources, procurement, logistics and marketing. These business models were built on the idea

of a progressive process of cost decreases in transactions (efficiency) – that is, an increasing value of online exchanges through the marketplace. Vertical markets connected buyers and sellers in one specific industry. Some exchanges turned information aggregators, one-stop shopping source for goods and services produced by a specific vertical industry (Ordanini & Pol 2001).

The evolution of e-marketplaces also witnessed corresponding changes in their revenue options. Most companies that started as independent B2B marketplaces and built their own platforms switched onto selling the technology or advising other start-ups (for example, Ariba and Commerce One). As incumbents realized opportunities for generic knowledge activities and processes connecting communities of practice, horizontal marketplaces emerged. Around October 2000, as third-party exchanges were imploding, there emerged a number of “consortia,” or e-marketplaces founded by large-volume buyers in certain industries, who would band together ensuring their suppliers sell to them through a new channel. In addition, the catalogue was no longer the main market mechanism used to support exchanges. Rather, the emphasis shifted to dynamic pricing solutions (such as online auctions), which were expected to increase cost-based competition (Ganesh *et al* 2004).

By March 2001 about 400 e-marketplaces closed down or were acquired by others. Prominent e-marketplaces Chemdex, Promedix, Petrocosm, Metalspectrum, Metalsite, Aluminum, Freightwise, PaperX, AsphaltExchange, BuildNet, Heavyware, and Aerospan closed down. However, experts expect business-to-business (B2B) to rise from \$226 billion in 2001 to \$2.02 trillion in 2006 (Bellomy 2002). e-Procurement focus will be on understanding the requirements of the business and therefore being able to drive the business forward, coordinating information exchanges and improving relationships with suppliers by managing them more efficiently and developing negotiation and sourcing strategies. Challenges confronting the e-marketplaces enunciate the need for change that must be accomplished against the backdrop of a major shakeout, and increasing resource rationalization. At this juncture in their development, there are two critical questions: (1) What makes some e-marketplaces succeed while others have failed, and (2) How will b2b marketplaces evolve in the years to come?

Many people attribute the success of e-marketplaces such as Freemarkets, Chemconnect, to their underlying business models. A cursory glance of several failed marketplaces reveals no major differences in the components of the business models or product/services from these successful marketplaces. Researchers have observed that the performance and growth options of electronic intermediaries differ based on the nature of product focus (Ordanini & Pol 2001), market microstructures (Zaheer & Zaheer 2001) and whether they are service or commodity based (Wareham *et al* 2003). Pillai & Sharma (2003) observe that successful e-marketplaces exploit unique customer and competitor relationships. Perhaps the most significant lacuna in the study of e-business and their success concerns the linkages between institutional differences, types of coordination and control systems within the industry and the priorities/responsiveness of firms in developing distinctive capabilities. The connections between institutions, firms and performance have been explored in a number of recent papers through institutional economics literature (Whitley 1999; Casper 2000). These contributions have highlighted how differences in industry structure, institutional norms and arrangements, organization of business associations, and product markets generate opportunities/incentives for firms to pursue distinctive strategies. These institutional variations not only lead to different rates of performance, but also encourage different kinds of firms to concentrate on different kinds of competencies within new industries (Casper 2000). Any attempt to understand why some marketplaces are successful involves the comparative analysis of these connections and the development of a framework for systematically conducting

such an analysis. An understanding of what distinguishes successful marketplaces is important to fathom opportunities and options for growth. In order to explore these issues, we present an exploratory study, based on several case studies of successful e-marketplaces in India and USA. We conducted the case survey to gain clearer understanding of the firm-level and institutional variable underlying successful e-marketplaces. For the purpose of this study, a successful e-marketplace is one that has witnessed increased transactions, higher growth rate and positive financial performance, especially return on capital employed (ROCE). This study employs the tools of historical analysis to identify successful e-marketplaces, explain why they are successful and identify the institutional aspect of marketplaces to offer insights in to what could emerge in the future. The key questions that are addressed in this study are the following.

- What are the characteristics of successful e-marketplaces?
- To what extent can the success be explained by the business model, the industry, the product and firm characteristics?

The paper is organized as follows. The next section presents the methodology adopted, followed by the results. Managerial implications and research extension are discussed in the last section.

2. Methodology

In economics, management and organization theory, evolutionary theories, based on historical analysis, have been developed to recast the fundamental assumptions of how organizations and markets behave. Several authors have provided useful frameworks for analysing businesses, such as profit models (Slywotzky & Morrison 1997) and strategy maps (Kaplan & Norton 2004). These approaches are based on a long tradition of classifying firms into “internally consistent sets of firms” (Ketchen *et al* 1993). These groups – typically conceived of, and organized through the use of typologies and taxonomies (e.g., Miles & Snow 1978) – are then often used to explore the determinants of performance. Business case studies are employed as a research method when richly detailed information is likely to be obtained. We chose the case survey method to understand firm- and industry-related variables explaining overall business performance. Case studies have been chosen to provide more compelling evidence, thus increasing the robustness of the overall research (Yin 1994). In addition, multiple case designs allow for cross-case analysis, and yield more general research results. According to Yin (1994), sample selection should be dictated by replication logic instead of a statistical one. Each case was considered as an experiment in itself, subsequent sites being used to either confirm or refute previous findings.

We chose a purposeful sampling approach to identify successful e-marketplaces. For the purpose of this study, the following criteria were used to define successful e-marketplaces.

- The firm is a business-to-business marketplace, deriving at least 70% of its revenues through transactions facilitated through the internet
- It has survived the shakeout of 2002
- It has an above average growth rate of surviving marketplaces
- It has positive financial and non-financial performance (increased market power, proxy measure captured by number of acquisitions, market share, important collaborations and alliances etc.)

e-Marketplaces were picked one at a time (based on directed Google search and secondary sources), starting with those that seemed to best meet the selection criteria. Based on the above criteria, 46 marketplaces were identified. These firms were some of the leading business-to-business marketplaces across North America. Data about the marketplaces were collected from multiple sources, which included semi-structured interviews with the CEOs, CIOs, CFOs, vice-presidents, as well as the managers of the marketplaces. Other sources of data included secondary data sources such as SEC filings, the Internet Archive (www.archive.org), industry publications, such as IDC reports, Internet Week, Tec Press, New York Times, Financial Times reports, company releases, and analyst reports, thereby achieving triangulation of sources and methods.

The sample of e-marketplaces presented here is limited, and cannot be representative of all the industries and e-marketplaces. Our goal is to explore empirically a key topic for the electronic business, especially e-marketplaces, collect facts and derive well-substantiated theses from these facts. These theses are published to stimulate further investigation from the practitioner and research community. From a methodological point of view, we conducted an empirical research following two parallel threads, which complemented each other: a systematic literature investigation and an on-field exploratory study.

3. Results

To identify the factors considered, the case histories were circulated among four independent experts. Each of them identified the factors separately, each prescription was passed around anonymously, and the process was continued till we found no variations across experts. The outcome of the exercise was interesting. First, none of the successful e-marketplaces were endowed with unique business models. e-Marketplace success was a function of the industry structure in which they were embedded and of the unique advantages the marketplaces provided, compared to other incumbents in their industry, thus supporting market microstructure theory. Before starting to understand the successful marketplaces, we present a few general observations. Buyer-owned marketplaces are more likely to be successful when there are few large buyers in that industry and similarly for supplier-owned marketplaces. Markets with a history of collaboration, offered process focused e-marketplaces competitive advantage over activity-focused marketplaces. Moreover, marketplaces that enhanced the value but preserved the opaqueness of the market seem to succeed. The following paragraphs describe factors associated with successful marketplaces in detail.

4. Ownership and bias

Successful e-marketplaces are those that get most, if not all, of their (revenue) funding from the companies that use them as a buying and selling resource, rather than being funded by venture capital companies or a single industry source looking to make a quick buck. Consortia-operated marketplaces offer a positional advantage since companies share the ownership while also being active participants in the market, thus assuring reasonable transaction volume. The value of being part of a large network of firms offers direct and indirect network externality effects (Katz & Shapiro 1985). Size also drives cost by way of economies of scale, which can be substantial when the mediating technology is digital (Varian 2000). Commitment from founding members increases the use of the marketplaces and is a salient factor in commodity-type grow-big-first marketplaces. The bargaining power of buyers and suppliers is a critical

force shaping industry competitiveness (Porter 1985) and the presence of such power will remain vital in determining a marketplace's ability to exploit rents. Biased marketplaces are in a better position to emerge as successful marketplaces since they are guaranteed to receive a large volume of their owners' transactions, helping them achieve sufficient liquidity. They also possess industry-specific expertise which provides them an advantage relative to neutral marketplaces. Most successful marketplaces are not focused on trading or matching buyers to sellers., they are more about a big buyer bringing on its smaller suppliers. Buyer-oriented marketplaces concentrate primarily on creating efficiencies for the corporate buyer. Buyer-oriented networks attempt to drive procurement costs down for the participating buyers, allow buyers to "aggregate their expenditure", reduce administration costs and to facilitate global sourcing. Yoo *et al* (2003) observe that biased marketplaces provide greater surplus to buyers and suppliers compared to neutral marketplaces, although a greater share of the increase in surplus is conferred to the owners'. The seller-oriented marketplace concentrates on bringing multiple sellers together into a central catalogue and product information repository (example, e-Steel). The key to a successful seller-oriented marketplace is to provide multiple sellers a forum to present their catalogues and conduct in-trade with as many buyers as possible.

Consider Transora, a marketplace for packaged-goods companies. Transora's investors include Bristol-Myers Squibb, Campbell Soup Co., Kraft Foods, and Unilever. To date, the e-marketplace has raised US\$240 million from 54 of its represented companies. All these companies use the marketplace to buy and sell services and goods ranging from honey to truck space and packaging. Quadrem is a consortia-operated public e-marketplace, providing supply-chain processes for both buyers and sellers in the mining, minerals and metals industries. It is backed by 21 major mining organizations with the major shareholders being Alcan, Alcoa, BHPBilliton, De Beers and Codeelco among others. The market for procurement in this industry is about \$US200 billion with Quadrem buyers themselves representing about \$US80 billion. Elemica is an e-marketplace that services the worldwide chemical industry and has been formed by a consortium led by BASF, Bayer, Dow and DuPont. Mining Industries are very heavy users of chemicals for mining operations and processing and the interaction between BHPBilliton and Ciba led to the connection of Elemica with Quadrem. This hub-to-hub connection of the two e-marketplaces is expected to be around \$US70 million with no additional fees being charged for the inter-connection. SiteStuff founded in July 1999, received \$30 million from the Octane Alliance, a consortium of property management industry leaders, including CB Richard Ellis, Insignia/ESG, Jones Lang LaSalle and Trammel Crow Co. The alliance members themselves represented a three-year, \$15 billion sales opportunity. Global Healthcare Exchange, LLC (GHX), provides business-to-business procurement solutions for the healthcare industry. GHX provides single-source ordering and tracking for both medical and non-medical products. The privately held company was founded in March 2000 and now comprises more than 75 supplier members. Equity members of GHX include Johnson & Johnson, GE Medical Systems, Baxter International Inc., Abbott Laboratories, Medtronic Inc., Becton, Dickinson and Co., Boston Scientific Corporation, C.R. Bard Inc., Guidant Corporation and Tyco International, Ltd.

5. Service focus: Generic vs specific processes

Highly generic processes, such as procurement, are intended to appeal to a large number of users, irrespective of their needs and are often made with highly codified knowledge and

standardized, interchangeable labor inputs. For firms focusing on these kinds of standardized outputs, product and service innovations are concerned with developing new product qualities that can be sold to mass markets with standardized inputs. In contrast, more dedicated products are often differentiated by particular qualities of the individual maker that appeal to specific customers. Marketplaces that have focused squarely on business processes have endured, more so neutral marketplaces in industries where both buyers and suppliers are fragmented. Wareham *et al* (2003) observed that marketplaces performing the more capital-intensive supply-chain functions, such as transaction management and inventory management, command greater economic rents as a function of greater proportions of the supply-chain under their domain, as well as increased yields due to greater capitalization levels. They found a positive correlation between profitability and the provision of liquidity management in service-based portals, and the provision of liquidity and logistics management in commodity based portals. Van Heck & Ribbers (1997) use a so-called reach/scope framework for IT infrastructures in the e-marketplace context. They propose that an effective e-marketplace with long reach (e.g., a relatively open structure allowing many participants) has low scope (simple functionality). Agreeing on a highly complex functionality with many participants is simply too difficult to accomplish. e-Marketplaces with short reach (relatively closed structure, resulting in few participants) may have high scope (complex functionality). Elemica facilitates generic-order processing and supply-chain management of contract and repeat chemical transactions. Elemica connects each member company's enterprise planning system – whether SAP, Baan or other – to the hub to automate confidential transactions. Similarly, Pantellos Group LP, an e-marketplace for large utilities, focuses on generic cost management requirements of its customers.

6. Moving beyond transaction revenue

Successful marketplaces have been able to move beyond a revenue model based solely on claiming a portion of each transaction, a model that has not found wide acceptance in many industries. Instead, most successful independent e-marketplaces have found alternative revenue options such as licensing, hosting services, and integration services. VerticalNet and SciQuest have all but ditched their initial business models – which were based on charging fees for online B2B transactions – and instead have begun to position themselves as B2B software vendors (Ganesh *et al* 2004). e-Steel, one of the best known of the early independent, public e-marketplaces also switched its focus to offering software in 2002. It offers its SupplyNetwork software for managing the steel supply-chain in a hosted model and as a packaged application. It has signed on such large customers as Automaker Ford, and the BHP Steel division of BHP Billiton, to use the software for their private exchanges. About 80 percent of e-Steel's revenues are generated from selling software licenses, with the remainder coming from the public exchange for steel and its consulting work. Beginning in 1999, Altra Marketplace, has added integration services. And, in 2001, Altra began licensing its exchange platform software to large energy companies launching private exchanges. Sixty percent of Altra's revenue comes from services, not transaction fees. Altra's integration services essentially allow customers to transact business on its site and have the deal instantly reflected in their enterprise resource planning and other back-end systems. Customers can also use the services to automate connections between online trades and their own risk management and credit systems. Chemconnect thrives by being flexible enough to expand its original transaction-based revenue model to include subscriptions. SiteStuff's negotiates volume discounts on MRO supplies—office supplies, lighting and so on—and resells them at a markup.

7. Value impact – enhancing or destroying

The fourth set of variable reflects the innovations brought out by the marketplaces, whether they enhance or destroy competencies of incumbent players in the market (Anderson & Tushman 1990). Some marketplaces evolve through a process of support and development of incumbents. But other marketplaces differentiate, creating more and more space for new organizations to emerge, proving products and/or services. All the successful e-marketplaces we studied were value-enhancing. Consider how bond exchange TradeWeb works. For decades, pension, mutual fund and other institutional money managers in the market for bonds had to work with telephones, calling several brokerage firms for prices. These salespeople contacted their trading desks, which relayed prices back to the salespeople, who passed them on to the investor. The process often took so long, the prices were no longer current by the time the investor received them. TradeWeb, by contrast, enables a bond buyer to request quotes from several brokers simultaneously. Convenient as it is for buyers, TradeWeb came to life as much out of fear as out of efficiency. For brokers, electronic-ordering systems threatened to squeeze already thin margins even further. But unlike the new digital startups that sought to eliminate established intermediaries, TradeWeb was created with the aim of maintaining the status quo. TradeWeb helps existing bond brokers and dealers do their jobs faster.

Instead of creating disruptive marketplaces, industry-backed and neutral exchanges are now pitching themselves merely as net channels for distribution. Many are also using their software expertise to streamline supply-chains, as at Dell and Cisco. Or they are mixing and matching models to fit their markets. Altra Marketplace, an independent online energy trading exchange, is one of the few independents to have achieved profitability. Altra's secret to success has been to take a market that already existed in batch mode – the often clumsy and complex process of brokering energy products such as crude oil or electricity – automate it and move it online.

8. Market opaqueness: Preserving vs obliterate

The common characteristic of successful independent e-marketplaces is that they have been astute about conforming to the prevailing business practices in their industry rather than attempting to force more-radical changes than necessary on enterprises that may already be uncomfortable with e-commerce. While liquidity certainly attracts traders, it is also essential for e-marketplaces to understand and preserve the desired level of transparency in their industry. In addition to offering value-added services in the form of subscriptions that give traders access to risk management and credit tools, many of the successful marketplaces let traders compare what different brokers are buying or selling anonymously. In business transactions comprising perfect information, there is no transaction friction; all information is freely available. In theory, this environment minimizes purchasing overhead costs. However, companies cannot realize these benefits without increased communication and most companies are loathe to share information about their internal operations, especially with competitors.

Altra and Arbinet, for example, allow buyers and sellers to remain anonymous through much of a transaction, a common practice in energy and bandwidth commodity trading. SecuritiesHub and Trade-Ranger members demanded that each company's data be sectioned off in the larger community framework. Particularly in content area, firms want to make sure there is no cross-pollination between buyers and suppliers. Suppliers do not want other

suppliers to know their pricing in general. Independent e-marketplaces must contend with the concern felt by many enterprises that, by using a public exchange, they could risk disrupting relationships with valued business partners and threaten the business advantages that they believe are inherent in their existing business processes. This is one reason many have begun to embrace private exchanges. With a private exchange, they can model online trading to match their own business processes and avoid the price pressure that using public e-marketplaces could bring in.

9. Rapidity

The other aspect of successful e-marketplaces, also of generic business, concerns the speed with which, and degree to which, firms are able and willing to change their capabilities and competences. For example, Chemconnect was the fastest and best fund-raiser among its dozens of competitors – bringing in \$105 million by the time the stock-market bubble burst in 2000, compared with \$50 million for its chief competitor, CheMatch.com. Mr John F Beasley, Chairman, realized that the only way to persuade traditional chemical companies to trade online was to allow the industry to profit from ChemConnect – so in the spring of 2000, he raised \$72 million from 38 companies as equity. To keep the exchange neutral, he limited each company to, at the most, a 5% stake. Involvement of key industry players such as DOW, BASF, BP, SAP, Mitsubishi, and Repsol in the fragmented chemical industry, where the number of suppliers were only a few, secured ChemConnect its position in the chemical industry. Covisint is a fine example, to show that despite involvement or support from buyer-consortia, marketplaces fail because of inertia. Covisint had no headquarters and did not name a permanent chief executive officer until April 2001. It also did not set prices for products in the supply-chain, till June 2001.

10. Creation of complementary assets and appropriability

In many of the markets where successful e-marketplaces emerged, they often increased efficiencies in procurement by restructuring existing processes and by requiring sticky industry-specific investments. Exostar's collaboration service, ForumPass, enables business partners throughout the aerospace and defense industry to work together more effectively through shared online workspaces. In developing ForumPass, Exostar developed new technology that provides foolproof security, yet also makes use of public network infrastructure and the ubiquitous internet browser. The key to success was enabling users from different companies to control the data they owned; regardless of where it was stored. Successful marketplaces were those that could protect any proprietary knowledge advantage with low access to complementary assets. Transora initially focused on procurement and sourcing tools. It then spent a lot of effort building its data synchronization network solution, which eventually overtook everything else in terms of revenue. Thus, a marketplace that could raise barriers in an environment characterized by extensive knowledge spillovers succeeded, while many others failed. Similarly, E2open offers free B2B client-targeting SME suppliers. This client eliminates the need to purchase and manage tens of thousands of dollars worth of software at hundreds of thousands of dollars annual management cost. E2open also has introduced the E2open B2B Client, an easy-to-install and -use B2B integration software, which provides companies lacking a B2B infrastructure with one option of connecting to their customers and partners.

11. Product markets: Commodity vs. specialized markets

All successful e-marketplaces share at least one common trait. They have staked out industries dominated by commodity products and large numbers of highly fragmented buyers and sellers. Consider the chemicals industry. Standardized products like methanol and benzene do not require a lot of negotiating. What they do require is an easy means of fulfillment, without a lot of repetitive key-entry of data. Reason for ChemConnect's success, is more closely tied to product markets than skill. Chemicals are a \$1.7 trillion industry. It is huge, and global, and fragmented. So there's plenty of opportunity for an e-marketplace to make a difference." In contrast, Chemdex, a now-defunct experiment focused on research chemicals only – a market segment too small to sustain an exchange. Specialized product clearance necessitate that each contract had to be tailored to the requirements. Specialized exchanges suffer from low transaction volume as the commodity specifications – including quality and ISO 9000 certification, lead times, precise order sizes, geographic requirements and transportation conditions or any related service factors – cannot be clearly and precisely stated. Moreover, purchase lots are not large enough to encourage suppliers to bid. Moreover, in a country with a relatively small business sector and slow adoption of e-business technology, public e-marketplaces do not offer a sufficiently compelling value proposition for buyers or suppliers to join.

12. Competition and coordination structures

The concept of market structure is central to both economics and marketing. The extent and characteristics of competition in the market affect choice behaviour among the actors (Baumol 1961). Markets differ significantly in the ways that economic activities are coordinated and controlled (Langlois & Robertson 1995). In particular, the extent of collaboration in coordinating different kinds of activities within and across production chains varies among different industries. These do not typically involve the merging of ownership interests but rather collaboration and authority-sharing in a number of areas, such as procurement, training, union negotiations, and standard setting, as well as price stability and production quotas. Following Whitley (1999), two forms of markets of interest to e-business emerge: *fragmented*, and *collaborative systems*. Fragmented business systems are characterized by low ownership and alliance integration of production chains. Inter-firm collaboration is low or restricted to relatively short term and often highly personal linkages focus on quite narrowly specified associations. Inputs and outputs are traded as commodities on competitive markets that fluctuate frequently. Cooperation between firms is minimal and organized coordination of activities across them rather rare and difficult to sustain. Explicit contracts and formal trust mechanisms are the norms. Product announcements and market institutionalization is driven by competitive interests of an individual firm. Supply market fragmentation fosters buyer power in any negotiation. Supply capacity, a cost incentive or economy of scale must exist so that suppliers are motivated to pursue additional business on exchanges. The third condition is that the market prices of products must be somewhat elastic. Market exchanges that deal with goods with inelastic prices face growth challenges. An example is high-end liquors. This good does not readily adapt to market forces so prices remain stable even when supply is high and demand is low. Neutral marketplaces have a better chance in the computer parts industry (Applegate 2000), and the construction industry where both buyers and suppliers are fragmented. This should be an important criterion for developers of independent marketplaces such as Ventro and VerticalNet in determining target industries (Narayandas 2000; Collura & Applegate 2001). The same is true for goods in some electronic and other select markets.

Collaborative business systems combine high levels of ownership coordination of economic activities with low alliance coordination. As in fragmented business systems, standard market contracting is the usual way of coordinating inputs and outputs of these firms and few long-term connections between suppliers and customers develop, often between players who compete or produce similar products. Industry structure induces competitive advantages to the marketplace focused on generic process benefiting major players. Consider the aerospace and defence industry which operates in a unique environment combining fierce competition and close cooperation. In these complex relationships, companies can be partners in one programme and competitors in another, all while using a large number of the same subcontractors throughout their supply-chains. For example, Boeing and Lockheed Martin competed on the Joint Strike Fighter programme for which BAE provided electronic systems to both teams. At the same time, however, Boeing and Lockheed Martin also operate a joint venture called United Space Alliance that provides Space Shuttle support services to NASA. Buyer-owned marketplaces are more likely to be successful when there are few large buyers in that industry and similarly for supplier-owned marketplaces. Exostar was developed to help lower the cost of procurement for all participants in the supply-chain. Today, it has nearly 13,000 registered buyer and supplier companies, five thousand of which are actively involved in online trading at any given time.

13. Industry regulations: common vs. restrictive

Often, a product market may be restrictive (government controls), and thus require specialized assets to manage operations. The global wine industry displays all the characteristics that suit electronic marketplaces. It is highly fragmented, international, multi-lingual, operates in many currencies, and it is information-intensive. Despite this, many e-marketplaces have failed. The primary reasons being differences in wine trade regulations and their complexity. From worldwinetrade.com and B2Bwine.com to xwine.com, a large number of players exited. The more localized the regulations, the more customization is required in packaging and digitization, and it is difficult to exploit economies of scale. On line auto infomediaries like Autobytel, Auto Web, and Cars.com, suffered from restrictive state-level policies, as some states require a new car buyer to pick-up their car at a dealership. Thus they lost out on economies of scale and complete fulfillment of customer requirements.

Table 1 lists the various factors and their observed frequency in our sample. Ownership and bias, and service focus (generic) were the major factors underlying successful marketplaces. Value impact (enhancing) and market opaqueness emerge as other significant firm related factors associated with successful marketplaces. Product market characteristics, and complementary assets and appropriability emerge as salient industry related factors. The results indicate that e-marketplace success is a function of the industry structure in which they are embedded and the unique advantages that the marketplaces provide compared to other incumbents in their industry, thus supporting market microstructure theory (Spulber 1996). The result does not throw up any new surprises. Despite the academic and trade-journals hoopla about e-marketplaces and their business models, the results here indicate that all e-marketplaces are business-first, and the basic tenets of economic principles equally apply to them. Several of the factors identified are common to physical and e-marketplaces. For example, rapidity, measuring the degree by which a firm acquires financial, market and other related resources that endow unique competitive advantage, is common to both physical and e-marketplaces. So what is uniquely different to e-marketplaces? In my humble opinion, it is only in the creation of complementary assets and appropriability mechanisms that the e-marketplaces build

Table 1. Factors underlying successful marketplaces.

Marketplace	Factors*									
	1	2	3	4	5	6	7	8	9	10
Altra	+	+	+	+	+		+	+	+	
Chemconnect		+	+	+	+	+	+		+	+
E2Open										
Elemica	+	+	+	+	+					
E-Steel		+	+		+					
Exostar	+	+	+	+		+		+	+	+
GHX	+	+		+			+			
Quadrem	+	+	+		+					
Pantellos LP	+	+	+		+		+			
SciQuest		+	+		+				+	
SecuritiesHub		+		+	+		+	+		+
Sitestuff	+	+		+		+	+		+	
Trade-Ranger		+	+	+	+			+		+
TradeWeb		+	+	+	+		+			+
Transora	+	+	+	+			+	+	+	+
Verticalnet										

1 – ownership and bias; 2 – service focus; 3 – multiple revenue streams; 4 – value impact, 5 – market opaqueness; 6 – rapidity; 7 – product market; 8 – complementary assets and appropriability; 9 – competition and coordination structures; 10 – industry regulations

+ indicates positive association of the factor

which offer unique positive network externalities. Provision of the complementary services is often at a fraction of cost compared to physical marketplaces, they can be bundled effectively with existing platforms, and can be systematically employed to lock-in a user in otherwise non-differentiated products. e-Marketplace offerings across the players are the same and with more cross-platform integration happening (for example, industry vertical standards based on XML being adopted as standards), complementary assets could be the only source of competitive advantage.

14. Conclusions

This research involved an empirical examination of the successful e-marketplaces. This study makes several important contributions to the literature on e-business in general and e-marketplace success in particular. First, the study indicates that e-marketplace success is influenced by industry characteristics in which the marketplaces are embedded and the

product-market characteristics of the marketplace itself, thus supporting institutional theory. Maintaining transformation control was important in market structures that have had a history of collaborative mechanisms emanating from inter-dependent demand-supplies. Marketplaces that focused on integration of process in such markets, especially for buyers, were able to acquire competitive advantage. The results show evidence of transaction cost thinking in the sense that the recipient firms seek to invest and capitalize on their specific advantage of process knowledge and expertise (Williamson 1985). Hence, they continue to prefer to support and sustain marketplaces that ensure their (knowledge) resources are efficiently used with the capabilities internalized completely within the incumbent players themselves.

Second, the study indicates the role that external factors play in defining the success of the marketplace. Institutional aspects of the industry in which the marketplaces evolve, nature of competition and supply-chain coordination and control do influence e-marketplace success. In many of the markets where e-marketplaces emerged, incumbents control the capabilities or assets that are required to apply internet technologies to existing relationships. B2B exchanges that promised increased efficiencies in procurement by restructuring existing processes, thus requiring sticky industry-specific information/activities, gained stability. Successful marketplaces could protect any proprietary knowledge advantage with low access to complementary assets. Thus, marketplaces that could raise barriers in an environment characterized by extensive knowledge spillovers succeeded, while many others failed. Industry structure seem to induce competitive advantages to the marketplaces focused on generic process benefiting major players.

The managerial implications of the study are as follows. First, managers need to have a comprehensive understanding of the external and internal factors that could influence the success of the marketplace. Understanding of the industry and firm-level characteristics help in establishing entrepreneurial success. Three major insights to managers from this study are as follows.

- (1) Offer non-competitive services that get industry buy-in, implies marketplaces recruit major industry partners to support through investment or commitment to business plan;
- (2) offer a platform that enables anonymous trading, with emphasis on trading, and not on data security. Adding value through physical inspection of all products and fast logistics fulfillment increase the success of the business model; and
- (3) recognize only genuine revenues. Derive and recognize revenues other than transaction fee. Reduce transaction costs by only allowing web site-based purchase orders and order confirmations. Facilitate dramatic scalability of the business through the implementation of automated trading software.

The results throw up tentative propositions that may be tested on a large sample. Some interesting testable propositions are as follows:

- (1) Marketplaces (open market) are appropriate for conditions of low asset specificity, unified governance (vertical integration) suitable for conditions of high asset specificity, and bilateral governance (buyer/seller partnering) suitable for conditions of intermediate asset specificity
- (2) Consortia marketplaces are more successful than neutral marketplaces in commodity products
- (3) Neutral marketplaces are only successful in fragmented and over-capacity supply markets

- (4) Access to financial, strategic partners and key customers in the early stages of the marketplace increases its chances of survival and subsequent growth
- (5) Marketplaces that focus on business processes succeed compared to those focusing on specialized activity
- (6) Marketplaces with multiple revenue streams are more successful than those focusing only on transactions
- (7) Marketplaces that build complementary products and services succeed in commodity markets
- (8) Marketplaces in commodity product markets have a higher survival probability in comparison with marketplaces operating in specialized product markets
- (9) Exit rate of specialized marketplaces is higher than commodity marketplaces holding for firm size at entry
- (10) Exit rates of marketplaces are higher in restrictive product markets than common product markets

The limitation of this study is its focus on successful e-marketplaces from North America and India only. With the acknowledged complexity of dynamics emanating due to case studies and lack of statistical analysis, it would be inappropriate to generalize the results too widely. We therefore identify the generalizability of this study as a future opportunity for research. The research context could be extended to include both successful and unsuccessful marketplaces to identify the factors impacting their success or failure. Also, of interest would be the analysis of ownership and bias effect on success of marketplace. Another extension of the study worth pursuing is to use alternate forms of research design and data collection. Survey-based research and longitudinal analysis of a sector could reveal variations in successful marketplaces. This would allow for greater breadth of data and predictions of evolution of marketplaces. There are a number of avenues for further research in this area. This work can be extended to examine dynamic factors such as first mover advantage, user expectations, strategic pricing and barriers to entry.

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