A Risk–Control Framework for E–Marketplace Participation

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E-MARKETPLACES – INTRODUCTION

The increasing trend in the use of Internet-based e-marketplace applications has created tremendous opportunities for businesses to manage effective supply chain management. Forrester Research predicts that the growth and use of e-marketplaces may reach US $7 to $10 trillion by the year 2005 and may account for 53% of all online businesses by the year 2005. White and Daniel (2003) describe e-marketplaces as Web-based systems that enable automated transactions, trading, or collaboration between business partners. According to Bakos (1998), an electronic marketplace is an interorganizational system that allows participating buyers and sellers to exchange information about processes, products, and services. This study aims to examine risks in e-marketplaces. We identify four types of risks: economic, technological, implementation, and relational risks in seven e-marketplace firms from a cross-section of different industries. We then present the control measures in the responses that the seven firms enforced in order to reduce and manage their risks. The contribution of this study is the development of a risk-control framework based on the findings for e-marketplace participation.

BACKGROUND INFORMATION OF THE E-MARKETPLACE FIRMS

Previous research has identified different types of e-marketplaces, including buyer-driven, seller-driven, vertical, horizontal, and enabling technologies that provide online buying services, auctions, functional exchanges, and net markets (Christiaanse & Markus, 2002, 2003; Kaplan & Sawhney, 2000; Lenz et al., 2002). Bailey and Bakos (1997) suggest these key roles of e-marketplaces: matching buyers and sellers, aggregating and facilitating buyers' demands, sellers' product, and acting as an agent of trust. Similarly, Kaplan and Sawhney (2000) classified B2B marketplaces as a two-by-two scheme considering dimensions on what firms purchase (manufacturing inputs or operation inputs) as well as how they purchase (spot buying or systematic buying).

Seven e-marketplace firms participated in this study from a cross-section of industries; namely, automotive, aerospace and defense industry, chemicals, construction, energy, agriculture, and plastics. First, Covisint, representing a buyer-driven e-marketplace in the automotive industry, has grown dramatically, and in January 2003, they had 76,000 registered trading partners. Second, Exostar in the aerospace and defense industry joined forces with Boeing, Lockheed Martin, Raytheon, and BAE Systems, four of the world's leading aerospace and defense manufacturers, to streamline the highly sophisticated processes that aimed to achieve zero tolerance for failures. Third, ChemConnect, originally conceived as a bulletin board site in 1995, primarily deals with feedstock, chemicals, plastics, and other products. It advertises more than 9,000 members from 150 different countries. Fourth, Construction.com, owned by McGraw Hill, acts as a portal for construction operations like its Dodge analytical service, helps contractors estimate costs, and make bids. Fifth, Pantellos group is an open marketplace focused on utility and energy services. Many large utilities in North America, including Houston-based Reliant Energy Inc., formed Pantellos group in the year 2000 to create supply chain services. Sixth, Farms.com, an e-marketplace in the agriculture industry established by merging with Agribiz.net's eHarvest, grew to offer an online trading platform for a wide range of agricultural products including swine, beef, dairy, cattle, poultry, real estate, and crop protection. Finally, Omnexus, a plastics industry owned by a Dutch company, offers browser-based transaction software for customers to buy directly from suppliers.

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E-MARKETPLACE RISKS

Despite the growth and hype of e-marketplaces, uncertainties, vulnerabilities, and risks existed in e-marketplaces (Choudhury et al., 1998; Sims & Standing, 2002). Exposures to risks increased when disparate services were provided to trading partners. The new services were threatened by internal factors such as lack of standards, lack of regulations, and lack of secure systems. Furthermore, external factors such as the volatile online political sanctions, natural hazards, legal issues, environmental issues, and other political instabilities threatened the firms. Reshaur and Turner (2000) suggest that risks can be viewed as hazards, uncertain outcomes, or missed opportunities. We categorized risks in e-marketplaces as economic, technological, implementation, and relational, discussed as follows.

Economic risks are derived from increased transaction costs. Most of the independent e-marketplaces such as Aluminum.com, Ventro Corporations, Chemdex, and Promedix were unable to maintain their liquidity due to large manufacturers generating large volumes of transactions and negotiating with suppliers and vendors on their own, thereby saving transaction costs for themselves while ignoring the smaller suppliers. Similarly, Vertical Net Inc and SciQuest Inc have transformed their businesses to become software vendors, thereby avoiding charging fees for online transactions (Hicks, 2001; Segev et al., 1999).

Transaction costs consist of coordination cost (made up of search cost for finding the right supplier or buyer) and the cost for exchanging information. Furthermore, contracting costs include the cost of negotiation as well as legal and administrative costs incurred in creating an enforceable contract that satisfies both trading parties (Gulledge & Mason, 2000; Le, 2002; Premkumar, 2003). Sklar (2001) and suggest that as e-marketplaces continue to evolve, the key component for their survival will be their ability to sustain global e-commerce liquidity and efficiency through trust-based transaction and settlement solutions.

Technological Risks

Technological risks are derived from integration issues (i.e., incompatible applications) and security issues (i.e., the volatile Internet environment). Technological risks impact suppliers, as they are required to adopt different technological solutions provided by the buyers (also known as technology squeeze). New and untested applications created scalability, security, and availability issues (Vaidyanathan & Devaraj, 2003). Poor business practices create administrative threats such as password sniffing, data modification, spoofing, and repudiation. Furthermore, a variety of standards and operating procedures caused a lot of frustration and resistance among suppliers. Suppliers who have attempted to outsource their business applications, in the hope of reducing costs and maintaining profit margins, faced the risks of outsourcing their critical business processes to different firms with different procedures (Gulledge & Mason, 2000). Likewise, changes in the online fulfillment processes have posed technological risks, as products and services are needed almost in real time. Integration of real-time sales orders with the existing supply chain management and order fulfillment has caused trading partners to be exposed to pressure.

Implementation Risks

Implementation risks are derived from the lack of bargaining power due to relationship-specific investment. Suppliers have attempted to implement the same technological path as buyers, but it leads to the risk of continued investment in new technologies and additional integration costs. Operation risks are increased due to the lack of technical knowledge of the system and training (Premkumar, 2003; Wise & Morrison, 2000).

Due to a proliferation of different types of technological solutions, maintaining standards in the management and business processes has become challenging (Cuny & Richardson, 2001). The lack of uniform standards increases the exposure to risks when disparate services are offered. Risks associated with e-business derived from poor business practices arose from applying weak procedures in the software development process; having deficiencies in the e-business protocols leads to technology-related problems. Furthermore, implementation risks are derived when trading partners introduce information links that closely monitor changes in their customer base (Vaidyanathan & Devaraj, 2003).

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