



# Through the service operations strategy looking glass: Influence of industrial sector, ownership, and service offerings on B2B e-marketplace failures

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## ABSTRACT

This paper contributes to the emerging area of e-service strategy in the context of business-to-business (B2B) e-marketplaces, which we view as Internet-based service delivery systems that link sellers' offerings to buyers. Although a myriad of new B2B e-marketplaces were launched over the past decade, a substantial number failed shortly after the peak of the NASDAQ in 2000. The bursting of the Internet bubble provides a setting for assessing salient, theory-based determinants of failure—and success. Accordingly, we apply a service operations strategy lens and complementary organizational theories to explain how three strategic factors—industrial sector characteristics, ownership structure, and functionality of service offering—may have influenced B2B e-marketplaces' odds of survival after the bubble. We empirically test these factors using logistic regression analysis on a sample of 854 B2B e-marketplaces.

Consistent with emerging e-services literature, our empirical results indicate that B2B e-marketplaces serving industrial sectors that are a better fit with the Internet service delivery systems—by high information dependence and low information tacitness—have the highest likelihood of success, as do e-marketplaces with service offerings that facilitate collaboration among multiple buyers and sellers. We also demonstrate the positive influence of consortium ownership structure on B2B e-marketplace survival, albeit not for first-mover consortia-backed e-marketplaces. Our findings contribute to the service operations strategy literature and provide direction for managers in the areas of e-service strategy and investment.

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## 1. Introduction

Over the past decade, business-to-business (B2B) e-marketplaces have captured the imagination of practitioners and scholars alike. In this research, we characterize a B2B e-marketplace as an Internet-based service delivery system that links sellers' offerings to buyers. A myriad of these new B2B entities were launched as online platforms to facilitate commerce and trading among Internet-linked businesses (Zhu, 2004). Unfortunately, a substantial number failed with the burst of the Internet bubble (Day et al., 2003; Laseter and Capers, 2002).

When the NASDAQ index peaked at 5,132 on March 10, 2000, it stood more than 500% above its level on August 9, 1995, the day of the Netscape IPO. By September 23, 2002, the NASDAQ

closed at 1,185. The 18-month decline of stock prices resulted in \$44.4 trillion of market value loss—including \$1 trillion in Silicon Valley's 150 largest companies. It was the largest stock market collapse in the history of industrial capitalism. (Goldfarb et al., 2005a, 1)

Notably, although the 2008 economic meltdown has reached deeper into “Main Street,” the losses from the Internet market collapse destroyed far more shareholder wealth (Lepro, 2008). Given firms' increasing investments in e-commerce and supply chain management, we use the bursting of the Internet bubble to gain insights on e-service operations strategy. According to Roth (2001), e-services “are comprised of all interactive services that are delivered on the Internet using advanced telecommunications, information, and multimedia technology” (translated by Oliveira et al., 2002, 722–723). In a call to advance e-services research, Boyer et al. (2002, 187) posed a number of yet unanswered questions, of which two are particularly germane to this study: “How should organizations segment markets and tailor their delivery methods to cut across several approaches to maximize perceived customer value? . . . What type of product, industry, and overall business strategy affect the choice of an effective e-service strategy?”

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Our study poses a variant of these service operations strategy questions in the context of B2B e-marketplaces. Namely, how does the value-added of the service-offering functionality, nature of the industrial sector served, and ownership model influence the odds of B2B e-marketplace success or failure? We apply principles from the service operations strategy literature along with complementary organizational theories to examine how mismatches between attributes of these three antecedents and the B2B e-marketplace delivery system increased the propensity to fail immediately after the bubble burst. In contrast, when their respective attributes are aligned (e.g., facilitated Internet channel exchanges and customer value-added), the e-marketplace was more likely to survive.

The dramatic B2B e-marketplace failure rate over a relatively short period offers a unique opportunity to shed light on service strategy-related drivers of the collapse. Despite the increased literature on B2B e-commerce over the past decade, the preponderance of the existing academic work resides in the information systems and strategic management literatures. Thus, much of the focus of the extant B2B research pertains to new business models and strategies for leveraging the benefits of technology and the attributes of the information it provides. Rigorous empirical work on B2B e-commerce in the operations and supply chain management literature is emerging, but it still lags other management disciplines.

Moreover, while e-marketplaces are “services,” we did not find any studies that predominantly make use of a service operations strategy perspective or lens to explain, in part, the risk of failure in B2B e-marketplaces. In addition, analysis of business success or failure is rare in operations management research in general. Toward that end, we subject to rigorous empirical scrutiny the failure rates of a sample of 854 B2B e-marketplaces using logistic regression analysis. To address our research question, our empirical model emphasizes three salient, strategic antecedents from theory and practice as potential differentiators of survivors and failures: (1) industrial sector characteristics, (2) ownership structure, and (3) functionality of service offering.

We first posit that the potential for B2B e-marketplaces to improve e-services within a particular industrial sector is, to some extent, a function of the information dependence and information tacitness of that sector’s characteristic value-added activities for creating products and services (Afuah, 2003; Evans and Wurster, 2000; Rosenzweig, 2002). In doing so, we develop a conceptual typology of industrial sectors based upon the relative information dependence and tacitness typically associated with the sector, drawing heavily upon the logic of the product–service continuum from the service operations strategy literature (Fitzsimmons and Fitzsimmons, 2008; Giffi et al., 1990; Roth and Menor, 2003; Sasser et al., 1978).

The emerging paradigm for success in e-services also brings to bear organizational ecology notions when considering the match between the industrial sectors and the service offerings on business performance. The organizational ecology literature infers that populations of organizations are heterogeneous and natural selection occurs, which, in turn, determines the odds of survival (Freeman et al., 1983). Following this logic, we argue that B2B e-marketplaces within industrial sectors characterized by value-added activities that are more transaction-based, codifiable, and scalable are more apt to be successful than those not having these information-based features (Boyer et al., 2002; Oliveira et al., 2002; Chava and Jarrow, 2004; Kauffman and Wang, 2003).

If all organizations within a particular industrial sector were equally likely to fail, then no organization would knowingly enter high-failure sectors. Instead, all would enter sectors with low failure rates. Thus, it is also important to consider service-offering functionality attributes—basic procurement, auction/matching of buyers and sellers, and collaboration—as enablers of B2B e-

marketplace success. To do so, we draw upon strategic network theory (Katz and Shapiro, 1994; Rohlfs, 1974) and transaction cost economics (TCE) (Coase, 1937; Williamson, 1975).

Strategic network theory suggests that service offerings, such as auctions, that dynamically and effectively match buyers and sellers are a key source of Internet value creation, particularly relative to basic procurement offerings (Amit and Zott, 2001). Likewise, based on TCE, collaborative service offerings have the potential to offer buyers and sellers joint value-added not only in the form of transactional efficiency, but also with regards to more informed decision-making (enabled by investments in specific assets).

The above rationale suggests that e-services in which the processes and offerings are aligned with the Internet channel are more viable because of the matches with e-marketplace delivery systems (Boyer et al., 2002; Oliveira et al., 2002; Roth, 2001). With a few exceptions, this natural fit of service offerings and industrial sectors with Internet service delivery systems has not been investigated empirically.

Finally, also important from an organizational ecology perspective is the influence of ownership structures as antecedents of B2B e-marketplace failures. In a recent study highlighting the value of ownership structures in the context of B2B e-marketplaces, Mitra and Singhal (2008) find that, on average, the stock market reaction from joining consortia-based exchanges is positive (albeit marginally significant) on account of its role in facilitating supply chain integration. Our study further considers the viability of consortium ownership models, along with those B2B e-marketplaces with independent and publicly traded ownership models, by considering both the Darwinian and Lamarckian views of organizational ecology. Specifically, we contrast the viability of independent ownership models with the publicly traded and consortium ownership models, highlighting the publicly traded model as the business analog to Darwinian natural selection (Darwinian view) and the consortium model as one of adaptation to uncertainty (Lamarckian view).

In summary, from a service operations strategy perspective, it has yet to be determined which particular attributes of these three antecedents create a propensity for survival. Our paper contributes to service operations strategy theory and practice in several ways. First, our empirical results show that industrial sectors characterized by value-added and exchange activities that are highly information dependent and more codified (versus tacit) create what we call a “sweet spot” that greatly enhances the odds of B2B e-marketplace success. Interestingly, consortium ownership models tend to reduce the risk of failure, on average, whereas counter to the Darwinian view, publicly traded entities have no special edge over their independent counterparts. Notably, service-offering functionality that supports collaboration (i.e., the most customer value-added attribute) outweighs benefits attributed to network effects of auctions in mitigating B2B e-marketplace failures. Moreover, collaborative service offerings trump the potential opportunism suggested by TCE with investments in asset specificity.

In the next section, we present our theoretical model and corresponding hypotheses. Section 3 describes our research approach, including background on our failure classification methodology and various measurement and classification methods used to operationalize the constructs of interest. In Section 4, we discuss the results of our logistic regression modeling and the degree of support for each of our hypotheses. We conclude in Section 5 with a broader discussion of our study’s implications, its limitations, and opportunities for future research.

## 2. Theoretical model

Viewing B2B e-marketplaces as e-services, we consider three theoretically important factors posited to influence survival out-

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