



# Electronic transportation marketplaces: a transaction cost perspective

Thomas J. Goldsby<sup>a,\*</sup>, James A. Eckert<sup>b,1</sup>

<sup>a</sup>Fisher College of Business, The Ohio State University, 554 Fisher Hall, 2100 Neil Avenue, Columbus, OH 43210, USA

<sup>b</sup>Haworth College of Business, Western Michigan University, Kalamazoo, MI, USA

## Abstract

Electronic transportation marketplaces (ETMs) are Internet-based mechanisms that match buyers and sellers of transportation services. With claims of reducing the administrative costs of transportation procurement to virtually nothing, the allure of ETMs is considerable. Shippers (transportation buyers) must therefore determine whether to pursue the new-founded opportunity and buy transportation services through an Internet-based intermediary or to buy services in a traditional manner. To date, there has been little structured thought on the topic to guide managers. Transaction cost economics (TCE) provides a robust framework toward this end. The TCE framework is adapted to present the procurement decision as one of “make” versus “buy.” The analysis is designed to help firms navigate their own determination to use an ETM and, when considered, the most appropriate form of ETM. The merits and caveats of ETM adoption are presented in the article. © 2002 Elsevier Science Inc. All rights reserved.

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## 1. Introduction

The Internet’s provision of low-cost, efficient interconnectivity among people has had a dramatic influence on the way in which business is conducted. Business logistics has not been absent from this Internet revolution. In fact, logistics and supply chain management are viewed to be among the most promising areas of application for Internet technology [1]. The maturing of the Internet has created opportunities for new logistics services and intermediaries in the supply chain. Among these new services is the Internet-based electronic transportation marketplace (ETM), intermediaries that bring buyers and sellers of transportation together by electronic means. This simple description embodies a wide variety of service offerings. According to Armstrong [2], marketplaces refer to several different types of websites, usually incorporating an exchange or auction, an information portal, and assorted value-added services. They range from basic load-posting and -matching services to complex offerings that encompass not only transportation transactions but complete order fulfillment services. They

may also be hosted by a variety of parties: individual shippers, carriers, or independent intermediaries.

The rise of ETMs has been of great interest to practitioners and academics over the past few years. In a short period of time, the market has witnessed the enthusiastic rise in the number of ETMs, followed quickly by a sharp decline. Many intermediaries fell victim to the recent “dot-com bust.” Evidence of this decline in the number of electronic procurement services is found in a survey of e-logistics service providers in February and November 2001. In February, the survey identified 75 fully operating ETMs. Merely 9 months later, only 52 of those companies still existed in their original form. Nineteen had ceased operations altogether, while four had been acquired. Many service providers that ceased operations failed to generate sufficient revenues given a nonexistent or poorly conceived value proposition. Those ETMs acquired by other firms likely possessed a recognized brand name, valuable technologies, or marketable proprietary logic. The services offered by surviving ETMs, however, have been viewed as worthwhile among shipping customers who use the Internet-based intermediaries to procure transportation services.

The primary motivations for using an ETM include the prospects of simple and lower-cost transactions, lower freight bill expenditure, and/or improved service as a result of greater access to a wide variety of qualified carriers. Hassle-free, low-cost transactions represent primary induce-

\* Corresponding author. Tel.: +1-614-292-2901; fax: +1-614-292-0440.

E-mail addresses: goldsby@cob.ohio-state.edu (T.J. Goldsby),

jim.eckert@wmich.edu (J.A. Eckert).

<sup>1</sup> Tel.: +1-616-387-0363.

ments for adoption. The lower cost of procurement is found in the fact that line and staff members of the traditional traffic department need no longer occupy time with transactional or contractual negotiations with individual carriers. Rather, the ETM serves as an independent intermediary to facilitate this process. The cost savings can be substantial as a result of not performing these activities internally. ETMs eagerly publicize their claims; one ETM suggests savings of US\$30 per transaction, while another claims to generate efficiency savings of 3% (of total administrative and freight expense) as a result of automating the load-matching process.

The purpose of this paper is to apply a well established framework to the decision of using an ETM or performing the transportation procurement activity internally. Transaction cost economics (TCE), also known as transaction cost analysis, offers a robust framework for the determination of appropriate governance structure: whether to insource business activity or hire entities in the open market for goods or services. This paper will use the TCE framework to determine when a shipper should utilize its in-house resources to make transportation sourcing decisions and when it makes sense to outsource that decision-making task to an ETM. This paper will first review TCE and then apply TCE to the transportation sourcing decision. Propositions will be developed with managerial implications directed toward shippers, though carriers and intermediaries as well can benefit from these insights and observations.

**2. A review of TCE**

Williamson describes TCE as “an interdisciplinary undertaking that joins economics with aspects of organiza-

tional theory and overlaps extensively with contract law” [3]. As originally conceived by Coase and readily apparent in the title of the field, the primary unit of analysis is the transaction—the medium of exchange between buyer and seller [4]. More specifically, the discipline concerns itself with the quantification of costs associated with exchange relationships and determining the most appropriate governance structure, or the institutional matrix within which transactions should be negotiated and executed. Governance structures that yield lower transaction costs are favored to those of more costly alternatives. The main determination among competing governance structures is the “make” versus “buy” decision. Choosing to perform activities internally (i.e., insourcing or vertical integration) represents the “make” alternative, while outsourcing represents the “buy” alternative.

The transaction cost perspective is valuable given its consideration of both economic and behavioral influences. Bowersox and Cooper [5] identify six key influences on transaction costs. Three factors are economic in nature and can be readily quantified. The other three factors introduce behavioral influences that tend to serve as qualitative factors in the TCE framework. Fig. 1 presents all six factors as they relate to transaction costs and the subsequent make-versus-buy decision. Each factor is addressed below.

*2.1. Assembling information*

The process of assembling information involves searching for exchange alternatives, identifying prospective trading partners, and determining precisely what will be exchanged. Depending on the purchase, there can be sig-

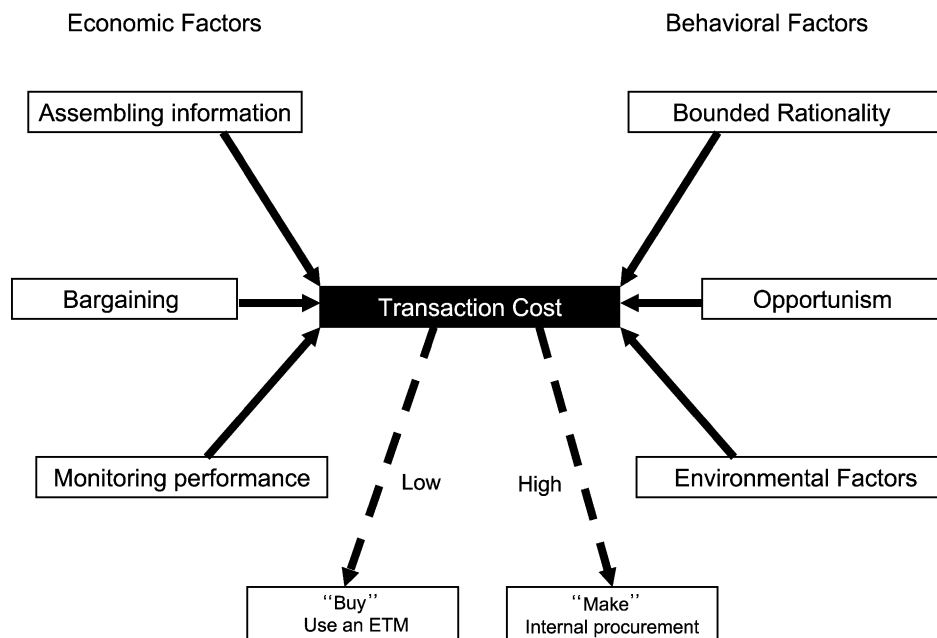


Fig. 1. The transaction cost framework.

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