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Chapter 18

Multi-Dimensional B2B Auctions for Electronic Commerce[1]

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INTRODUCTION

Since the early days of Electronic Data Interchange (EDI), many business-to-business (B2B) models of electronic commerce have been developed. Currently, the fastest growing segment of e-commerce is the B2B Web-based marketplace (Wilder, 2000). The dynamic nature of this business environment is driving major changes in business strategies and models, marketing, and information systems development. In order for new companies to compete in this extremely competitive environment, they must understand the nature of the market, and the vast commitment of resources necessary to establish a presence in that market.

Early online auction models were based on price alone. Today, businesses must consider the total cost of the transaction, including transportation, storage, financing, and insurance. Businesses must also consider whether an offering matches qualitative and quantitative specifications besides price (delivery date and conditions, quantity range, product quality, service, etc.) (Lenz, Andren & Hope-Ross, 2000). These multiple variables have increased the complexity of B2B auctions and led to the implementation of multidimensional B2B auctions (Teich, Wallenius & Wallenius, 1999).

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LITERATURE REVIEW

The e-marketplace is an Internet location where buyers and sellers can come together to transact business. B2B auctions started in the basic commodity markets, but are rapidly moving into more complex industries. The major driving force behind the growth of online auctions is the fundamental concept of market efficiency, which exists when all buyers and sellers have complete information and supply is in balance with demand. Perfectly efficient markets do not exist, but the Internet has the potential to move markets in that direction by its instant communications capability. Where once negotiations were conducted by human, Internet-based negotiations can be performed at a fraction of the cost (Quan, 2000).

Auction Models

Auction models take different forms in a continuum from one buyer and one seller to many buyers and sellers. The classification of B2B auctions is based on whether the price is ascending or descending, who initiates the bidding process, and the interactivity format (which is presented in Figure 1).

The simplest auction model is negotiation. In traditional or *forward auctions* the only factor determining the winning bid is usually the highest price. *Reverse auctions* are used primarily for procurement. *Exchanges* are generally very fast and efficient and work best for commodities with well-defined attributes (Messmer, 2000).

Direction of Bidding. *English auctions,* typically used in forward auctions, start the bidding at the lowest acceptable price and solicit higher bids until the auction closes. The highest bid wins. In *Dutch auctions*, the bidding starts at a high price and decreases by successive bids until the auction closes. It can be used in reverse or procurement auctions. A *Vickrey auction* is like an English auction except that the second highest sealed bid wins. In *Japanese auctions* the bidding begins at a low price and increases in fixed amounts. As the amount increases, bidders drop out until there is only one bidder remaining.

Figure 1: B2B Auction Market Framework (Teich et al., 1999; van Heck & Vervest, 1998)

		BUYERS: One	BUYERS: Many
SELLERS: One		Negotiations	Forward Auctions
SELLERS: Many		Reverse Auctions	Markets/ Exchanges