Ten Lessons that Internet Auction Markets Can Learn from Securities Market Automation

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Internet auction markets offer customers a compelling new model for price discovery. This model places much more power in the hands of the consumer than a retail model that assumes price taking, while giving consumers choice of vendor and product. Models of auction market automation has been evolving for some time. Securities markets in most countries over the past decade have invested significantly in automating various components with database and communications technologies. This paper explores the automation of three emerging market exchanges (The Commercial Exchange of Santiago, The Moscow Central Stock Exchange, and Shanghai's Stock Exchange) with the intention of drawing parallels between new Internet models of retailing and the older proprietary networked markets for financial securities.

Introduction

Internet auction markets, such as those offered by Amazon, eBay, Priceline, OnSale, and CNET’s Shopper.com, are earning increased business and investment by offering customers a new model for price discovery. This model places much more power in the hands of the consumer than a retail model that assumes price taking, while giving consumers choice of vendor and product. The monetary impact on retailing is currently small (Internet E-commerce in the U.S. in 1998 totaled US$7.8 billion. Compare this to Wal-Mart’s retail sales in 1998 of $130 billion, or total U.S. retail sales in 1998 of $1.7 trillion. But Internet sales are growing faster than traditional retailing, reflecting the appearance of auction based price discovery that has been made possible by Internet automation of many retailing outlets.

Models of auction market automation have been evolving for some time. For example, securities markets in most countries over the past decade have invested significantly in automating various components with database and communications technologies. Various other technologies have a mechanized securities markets for over a century; for example, stock tickers have provided automated real-time reporting of securities prices for nearly a century. Without automation, markets are constrained to operate at the speed of their human facilitators — frequently too slow and localized for complex or high volume market services.

This paper explores the automation of three emerging market exchanges (The Commercial Exchange of Santiago, The Moscow Central Stock Exchange, and Shanghai’s Stock Exchange) with the intention of drawing parallels between new Internet models of retailing and the established proprietary networked markets for financial securities.

Emerging market innovations can elucidate more clearly specific issues arising in automation, because the projects are not hampered by tradition, volumes may be smaller, trading more localized, and offerings more homogeneous. It may thus be easier to discern the rationale behind a particular technology choice.

Each of these three exchanges has, over the past decade, experimented with information technology appropriate for its market. Each discovered unique issues and pitfalls in automating its particular exchange operations. This article summarizes what was learned from market automation. The implications for automation of retail markets in general (what
has come to be called electronic commerce, or e-commerce — are drawn from the lessons learned in automating these securities markets.

**Case Study in the Automation of Shanghai's Stock Exchange**

Deng Xiaoping initiated the "responsibility system" in 1979 — a capitalist innovation which abolished central quotas and allowed farmers and some township enterprises to sell their goods on the open market. Many became rich in the ensuing decade. Savings grew with the growing wealth of the populace, endowing China with one of the highest savings rates in the world — between 35% and 40% of GDP over the past decade. With the introduction of economic reforms in the 1980s, average annual growth was pushed to nearly 10%. This modernization required substantial amounts of investment capital, which was the main role of the Shanghai Stock Exchange, China's main securities market.

Most trading takes place in what are called "A" shares, which may be traded on the floor, but more often, trading bypasses the floor completely, and is handled through automated systems. The Shanghai Stock Exchange issues a security card that identifies an individual as being authorized to trade in listed securities. The security card allows traders to bypass brokerage firms (and reduce brokers' commissions). This provides a more efficient use of the floor, by channeling routine trades directly to computer matching. Trades are captured at a brokerage room when traders post an order with the clerk. The order is posted in the Exchange's system through computer-to-computer communication. Matching takes place automatically. Security card holders still have to go through a brokerage firm to buy or sell securities and to settle and clear the transaction. Security cards make the job of brokerage firm easier by identifying the client to the brokerage, and allowing automated management of the client's account balance. In contrast, "B" shares (which are designed for trading by overseas investors) are only traded through brokers and on the floor.

**Liquidity** is quite good in "A" shares, where there is widespread participation by China's populace through approximately 3000 brokerage rooms around China. Turnover is around five times per year. "B" shares are less liquid, and there has been considerable interest in engaging more overseas investors in their purchase. Much of the current trading in "B" shares is done by Chinese within China, though they must pay for these shares with dollars in accounts outside China.

"A" shares can be traded by any trader with a Shanghai Stock Exchange issued security card. These traders can trade directly with the Exchange's computer system. Thus orders may come directly from trading counters — where there is a transaction-by-transaction cash settlement and exchange of securities — or through member brokers — where the Exchange provides net settlement of brokers accounts. Settlement is completed in the same day as the trade (T+0).

As in many emerging markets, price volatility can be more strongly influenced by the money coming into the market than by the business fundamentals of the traded firm. Volatility in the Shanghai market is very high by the standards of most developed economies, a situation that poses difficulties to orderly trading. This tends to compound the Exchange's challenges in the face of problems inherent in securities laws that are still evolving, and, in the difficulties faced by the China Securities Regulatory Commission in policing insider trading, misuse of funds, and false disclosure. Volatility is tightly monitored — important in a market where there is a rapidly expanding group of investors of varying levels of sophistication. The Exchange will not allow prices for a given security to vary more than 10% from the prior day's closing price. When the 10% mark is reached, trading is not halted. Rather, the settlement prices simply are not allowed to exceed 10% of the prior day's price. This limit does not apply to initial public offerings (IPOs) on the first day; it only takes effect on the second day after issue.

The Shanghai Stock Exchange (and its sister exchange in Shenzhen) use a continuous double auction, order-driven trading system, assisted by a computer network to transfer order information from brokers to the floor, and back again. During opening hours, information on trade prices and volumes is continuously disseminated to traders, and buy and sell orders are continuously received. Both have supporting clearing houses for transaction completion and settlement.

The Exchange floor opens Monday through Friday from 9:30 AM until 11:30 AM (at which time

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**Table 1: Market Capitalisation of Selected Markets in 1997**

<table>
<thead>
<tr>
<th>Exchange</th>
<th>Capitalisation Billions of US$</th>
<th>Stockmarket Turnover % of Market Capitalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>7600</td>
<td>84</td>
</tr>
<tr>
<td>Tokyo</td>
<td>2685</td>
<td>47</td>
</tr>
<tr>
<td>London</td>
<td>1500</td>
<td>42</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>440</td>
<td>46</td>
</tr>
<tr>
<td>China (Shanghai-Shenzhen)</td>
<td>140</td>
<td>225</td>
</tr>
<tr>
<td>Russia</td>
<td>100</td>
<td>10</td>
</tr>
</tbody>
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1 Asiaweek, Feb. 28, 1997, p. 62  
2 The Economist, June 14th, 1997, p. 124