December 1998

Financial Electronic Brokerages: A Transaction Cost Perspective

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Introduction

Recently we have seen a tremendous growth in the use of electronic brokerages (e-brokerages) for on-line investing (Fortune 1998; Gomez et al., 1996). The number of e-brokerages has increased from 12 in 1994 to over 60 today. These e-brokerages claim to have timely order execution and guaranteed execution prices at a very low cost to the investor. The low cost is a result of electronic processes replacing expensive human processes. It is, however, not clear what percentage of cost savings is a result of the automation of the order-taking process. E-brokerages may be relying on the perceptions and beliefs of the investor regarding the causality between automation, rapid transaction execution, and expected results. However, the process of trading may not be transparent enough to the investors. They cannot be sure that they are getting the best deal and yet, are willing to pay a commission to the e-brokerage for mediating in the trading process. This value that the investor attaches to the e-brokerage services has to be studied and contrasted with traditional brokerages. As a first step towards this goal, we attempt to determine the correlation between commissions, timeliness and best deals for the investor using some empirical data. We use extant theories from economics, specifically from transaction cost economics, to provide some insights into the impact and use of electronic brokerages. In the next section, we provide the research expectations and hypotheses. The third section contains the results derived from preliminary empirical data and a discussion of these findings in view of the research expectations.

The Brokerage Service

The traditional process of financial trading is described in Figure 1 that is self-explanatory. When a trade is executed, the "filled order" is printed by the exchange and the brokerage house alerts the customer. This process can take as long as 5 minutes or so. There are chances for errors by the phone- clerk and time is wasted as the order is walked to the trading pit. There are many ways to improve this process. Online trading attempts to do so with the claims of lowering transaction costs.

Approximately half of the services offered are really no improvement over the traditional process. We found that nearly all firms process the incoming order very similar to the traditional process. The difference is that instead of the order being transmitted over the phone, it is transmitted via the Internet. Once the order is received at the e-broker, a manager checks the order and routes it depending on the class, price, size, etc. More than half the firms route these orders to an exchange, such as the NYSE, AMEX or NASDAQ, where the trade takes place much like a traditional order is traded *{see Figure 1}*. This process brings up many questions. The firms claim that the order checking process takes no more than 10 seconds. If this is so, we must wonder what type of checking can be done in ten seconds, and if it is that easy, why checking is not built into the system? It would seem that an automated process could easily replace any type of checking, such as margin approval or type of trade approval, saving both time and money. Also, during high volume trading, an automated system would be extremely beneficial. There does not seem to be very large savings in time or resources using "online trading."

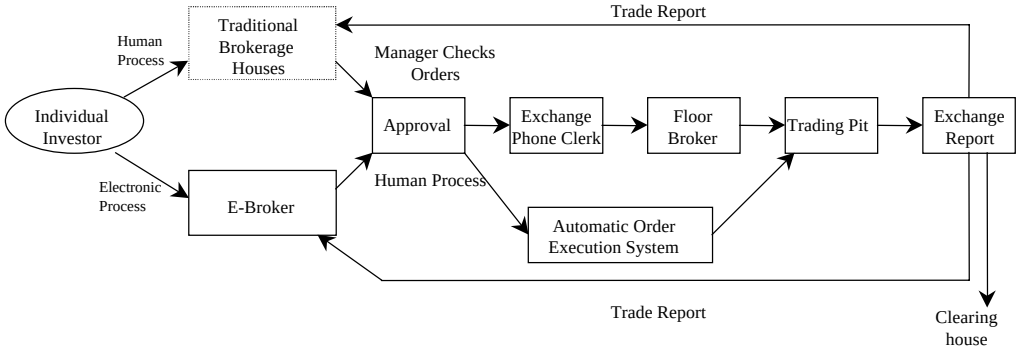

Figure 1. Trading Process

Furthermore, we were surprised to find that the remaining firms (nearly forty-five percent of those polled) do not even send their orders to an exchange. After the manager checks the order, received online, the order is routed to a third party, contracted by the e-broker, where it is traded. The e-brokers claim that the order is traded at current exchange prices *{see figure 2}*. The

firms claim that the whole process takes no more than three minutes, often less than one and a half minutes. They guarantee exchange prices, but exchange prices at which time of the process - Is it the time the order is received at the e-brokers, the time it is sent to the third party, or the time the third party receives the order? Most exchanges update quotes at least every fifteen seconds, and with the clock ticking, opportunities are lost. When time is critical in a trade and timeliness in executing an order a must, the individual investor needs to ask these questions.

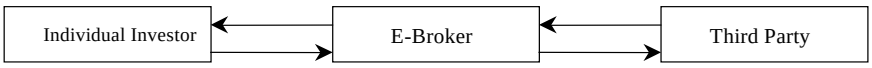

Figure 2. Third-party Trading

Research Expectations and Hypotheses

As explained above, brokerage services are perceived to be value-adding services to the process of trading. The addition of value can be understood by applying theories from transaction cost economics (Williamson 1985; Malone 1989). The formal definition of TCE applicable to organizational governance structure has to be suitably adapted to the context of e-brokerages. An e-brokerage will choose to use or not use other intermediaries (e.g., third-party) and/or a price structure for services depending on the transaction costs incurred by the firm for providing the services electronically, and also based on the transaction costs perceived by the investor. The concept of transaction costs, in terms of co-ordination cost and production cost, can be enumerated for each party in the trading process. We focus only on the transaction costs for the e-brokerage in this paper. Since the electronic trading process is mainly an information processing and negotiating activity, we also assume that the transaction costs consist entirely of co-ordination costs with negligible production costs. We also extend the elements of transaction costs to include the quality claimed by the e-brokerage as a determinant of the transaction costs. That is,

Transaction costs = *f*(quality, co-ordination costs).

The reason for using the quality of service, which is an attribute of the final product, in the transaction costs equation will be clear from the following explanation of what quality is in the context of e-brokerage. The quality of service operationalizes the inherent risk of undertaking a transaction in a time-critical activity such as trading. Greater the timeliness in executing the trading, the lesser is the difference from the firms' expected returns (since by guaranteeing exchange prices, the firm bears a risk), and hence, higher is the quality. Since quality makes a difference to the expected returns, it enters the cost equation of decision-makers as the cost of risk. Rather than using robust statistical analyses, we first try to operationalize some key concepts of the transaction cost economics in the information technology and brokerages services context, and then, use available empirical data to find simple evidence for some preliminary hypotheses. With this in mind, we state the following set of hypotheses as our main expectations regarding electronic brokerages that can be generalized to situations where information technology aids in the intermediating process:

1. E-brokers will charge a higher fee for more timely transactions because timely transactions lead to better prices for investors.
2. E-brokers obtain timeliness of transactions by trading at the exchanges and eliminating intermediaries. This also lowers co-ordination costs.
3. The commission reflects the value (in terms of lower investor transaction costs) that the investor places on timeliness and quality, and is not affected by the co-ordination costs faced by e-brokers (corollary to 2).

Data Collection

As a pilot study, we contacted 40 brokerage firms and conducted interviews and obtained data from their web sites regarding prices of their services. Specifically, we determined the brokerage fees, average time to execution (timeliness), the number of e-brokerages trading on exchanges, and the number trading with third parties (Please see Table 1). The brokerage fee figures are based on the cost to execute a market order for a minimum of 1000 shares. The timeliness is the firm's own printed or quoted times (or delays) for the trade to be completed. The brokerage fees variable measures the pricing structure of transactions and hence the transaction costs also. The timeliness measures the quality of the transaction. The distribution of trading between the firm and the Exchange and between the firm and third parties is an indicator of importance of co-ordination costs of transactions and quality. If a firm chooses higher percentage of trading with the Exchange (and a lower percentage of trading with third parties transactions, hence indicating a preference to eliminate intermediaries), the transactions in that firm have a higher co-ordination cost. The results presented in the next section are based on these operationalizations of key terms from transaction cost economics.

Results and Discussion

A preliminary investigation and categorization of the results are tabulated in Table 1. We have not resorted to robust statistical investigation, since this was an attempt to operationalize some sticky concepts in transaction cost economics in the e-brokerage context. We found that e-brokerages charge a higher fee for timeliness suggesting that higher quality signals the investor to perceive lower transaction costs. These e-brokers are electronically connected to their broker representatives at the

Table 1. Brokerage Fees and Execution Time

Brokerage Fees	# of Firms	Average Claimed Execution Time	# Trading on Exchange*	# Trading with Third Parties*
Less than $8.95	3	3 minutes	0	3
$8.96 - $13.95	5	2.6 minutes	2	5
$13.96 - $18.95	9	2.56 minutes	8	5
$18.96 - $23.95	12	1.75 minutes	10	4
greater than $23.95	7	1.14 minutes	4	7

*Some e-brokers send orders to either exchanges or third parties

exchanges, thereby able to get the best prices for the consumers at the earliest. This is contrary to trading with third parties that have a much higher bid-ask spreads and free ride on exchange prices. E-brokerages who trade with third parties offset their reduced direct revenues from customers by receiving part of the spread from the third parties (Fortune 1998). We also found support for the second hypothesis that as timeliness increases, the percentage of trading on Exchange increases suggesting the importance of lower co-ordination costs. However, this pattern does not continue indefinitely. For we find that a large percentage of firms with the highest timeliness (1.25 minutes), traded with third parties than the categories of firms with an average timeliness of 1.64 and 2.57 minutes. This seems to indicate a pattern for the relationship between quality and co-ordination costs. The pricing behavior, which may be conjectured as determined by transaction costs, is dictated to a large extent by the quality of the transaction. The distribution of volume of trading between exchange and third party is an indicator of the importance of transaction costs and quality. We expect that all firms charging high commission will trade directly with exchanges. But we found that a high percentage of these firms use third-parties. The high commission charged by these firms is not necessarily for the timeliness, but also for factors such as research and service quality, which investors value and are willing to pay for. These firms also seem to provide better cues and signals to indicate their high quality to investors. We plan to explore these issues in future research by proposing a more rigorous model for transaction costs and its constituents and by collecting more data (Konana et al 1998). Contrary to the expectations that the role of intermediaries will decline with electronic markets, another stronger intermediary (i.e., third-parties or market-makers) is growing and so the electronic brokering process has to be studied in greater detail.

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