

fies the identity of business parties in e-commerce. Digital certification fosters trust between buyers and sellers. Thus this proves that building a third party registry is necessary to solve the most serious problem that South Korean e-commerce faces which is lack of trust.

Who will be the third party registry, the government or private industry? The CA in Japan is established by the Japanese government. And even in US, EFT (Electronic Fund Transfer) which is a method for transferring money automatically by computer during e-commerce transactions is run by the Automated Clearing House which is closely associated with the Federal Reserve Bank of US (Lieberman, 1997). Thus we propose that the third party registry should be the government, especially for South Korea where a few conglomerates take up most of businesses. In South

Korea, people's trust in those big businesses is much lower than in the government particularly since the economic turmoil of 1997. When the most important thing while doing e-commerce is trust, the government of South Korea is more trustworthy than private industry. Thus in South Korea where the whole IT infrastructure building was a government project, it would be more beneficial to have a government agency that functions as the third party registry of all e-contracts in cyberspace in Korea.

#### CONCLUSION

Electronic negotiation through e-mail proves that e-mail can be an information rich medium through which people can negotiate not just price but other complex items such as subscription terms. Electronic negotiation can be automated by implementing the Intelligent NSS which

understands e-mail messages and negotiate with the customer using case-based reasoning.

Electronic contract through e-mail and web sites needs a third party registry which can verify and confirm the contract. But in a country such as South Korea where the national IT infrastructure is not as well developed as in developed countries such as the US, an organization like the electronic contract registry should be a non-profit agency of the government. As national IT infrastructure projects were government-driven, this project of nationwide e-contract registry business should be government-led; private businesses would not be trusted by the e-commerce participants which is due to the Confucian cultural aspect of respecting government than private businesses in Korea especially since the economic failure of 1997.

## ELECTRONIC CONTRACTING IN ONLINE STOCK TRADING

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### INTRODUCTION

The World Wide Web has grown at an amazing speed, and along with it has grown electronic commerce and transactions on the Internet. Approximately 2.7 billion dollars worth of transactions took place over the Internet in 1997, and the number is expected to climb to 5 billion dollars in 1998 (Guay, 1998). This phenomenal increase in electronic commerce has not been restricted to any particular industry. And this buying trend has affected both products and services. People are buying products from web shopping malls, travel services from Internet-based travel agencies, and financial services from banks and brokerage houses. One such service which has experienced unprecedented growth in the USA is online stock trading. In fact, more people trade securities than purchase books, CDs or any other product online.

The online brokerages are in the midst of expansion. The daily average of online trades in the last quarter of 1997 was 153,000. The majority of trades involved stocks not funds. In the first few months of 1998, 4.6 million individuals traded stocks online – an increase of over 150% in the last six months of 1997 alone. By the year 2002, more than 20% of American households are expected to invest electronically. Online trades accounted for 17% of total retail trades in 1997; this figure will approach 30% in 1998 (Dreyfuss 1998).

In this paper we evaluate the role of electronic contracting in US online brokerages. Electronic Contracting involves the exchange of messages between buyers and sellers, structured according to a prearranged format so that the contents are machine processible and automatically give rise to contractual obligations (Baum

1991). According to Runge (1998), electronic contracting comprises of two activities. The first, involves electronic agreement or contract negotiations. The second activity is the signing of contracts, which have been previously negotiated or exchanged electronically. In this paper we look at electronic contracting in the present model for online stock trading in the USA. We also investigate the various issues critical to the continued success of the industry.

### ELECTRONIC CONTRACTING IN ONLINE STOCK TRADING SYSTEMS

In the traditional method of stock trading, investors call broker for advice and placement of orders. The cost for a trade is generally a minimum amount plus a percentage of the total value of the transaction. One brokerage firm, Charles Schwab, introduced a business model that allowed investors (and brokers) to place their trades using a virtual private network for trading. Online trading systems allow investors to place their trades on the World Wide Web. Brokerage houses have set up web sites which handle all aspects of the transaction.

The process of online stock trading can be broken down into three distinct activities. The first activity involves an electronic agreement between a buyer and a broker (and similarly between a seller and an agent). The second, encompasses an electronic agreement between agents representing the buyer and the seller to transfer stocks from the seller to the buyer at a mutually acceptable price. The third activity is the execution of the contract, in which the order completion information is relayed back to the buyer and the seller. Let us look at the different activities in detail.

INVESTOR – BROKER

The process of online stock trading starts with the investor signing up with an online brokerage house. Some online trading systems allow investors to complete the entire application form over the Internet while others require a copy to be mailed to them using traditional mail. The form is a contract which allows the firm to trade as an agent for the investor at a preset trading price. After the successful completion of the application process, the client may start trading. When the investor places a trade using the online system the investor is effectively signing an electronic contract with the agent (their broker) to buy (or sell) a certain number of stock at market price (called a market order) or at a client-given price (called a limit order). The next step in the process is handled by the agent.

STOCK EXCHANGE

The agent or the broker electronically transmits the order to the exchange where the price discovery process takes place. Exchanges provide the organization and the operation of a trading arena in which their member can achieve profits. Despite the heterogeneity of trading processes there exists a homogeneous governance structure. A number of studies have espoused the benefits of information technology investments in stock exchanges. In a stock market, communication takes place between participants. Since all participants act strategically, and since the communication is not frictionless, the use

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of coordination mechanisms incurs costs known as transaction costs. Investments in information technology allow for a more efficient communication and potentially greater coordination of the market participants, thereby reducing transaction costs (Picot et al 1998).

Each exchange has a different system for price discovery, that is, to determine the price between the buyer and seller; these prices are called bids and asks. There are two fundamental types of exchange mechanisms: the market maker system and the auction system. "The major difference lies in that two orders may directly meet in the auction system, whereas in the market maker system, direct order matching is impossible. Here the market maker always intermediates and quotes bids and asks" (Picot 1998). There are other hybrid forms of price discovery which lie in the continuum between the market maker and the auction system.

In an electronic exchange (like the NASDAQ) the price discovery process takes place electronically. Brokers establish an electronic contract for sellers and buyers. The contract culminates with the execution of the trade or the transfer of shares from the seller to the buyer.

BROKER – INVESTOR

The confirmation of the trade execution is relayed back to the investor (buyer) by the broker. The settlement date is calculated as three days from the date of the trade – this is the time by which the investor has to provide adequate funds for the completed transaction. The buyer transfers money using a traditional instrument like a check, and this completes the trade.

REASONS FOR SUCCESS

What has fueled this increase in the electronic web-based stock trading? The success of online brokerages in the US can be attributed to four reasons: (1) resolution of Internet security concerns of users, (2) investor power, (3) reduced cost of trading due to competition, and (4) the state of the economy.

SECURITY

Investors access accounts using a password. SSL encryption protection is provided. While existing models of electronic commerce require investors to make payments over the web by credit card, online stock trading is different. For settlement of a trade in which the investor buys stock, the brokerage house extends a line of credit for a period of three days by which time the investor has to provide enough money to pay for the transaction. The investor generally uses traditional instruments like checks which are mailed to the financial institution. This environment does not require investors to use their credit cards or to provide and transmit personal information over the Internet.

INVESTOR POWER

Online brokerage systems give investors the ability to do all transactions on their own, thus giving them a the feeling of power. An increase in the number of market information sources on the Internet is also contributing to this surge in investor trading. It is quite possible that web trading is giving rise to a new breed of customer - the impulsive buyer, or in our case, the impulsive trader. A new generation of investors may find themselves trading not because they really want to, but they cannot resist the urge.

COMPETITION

Only 17 online stock-trading firms existed at the start of 1997. As of June 1998, there are 52 firms in the US. With the increase in the number of firms, competition has also increased. Online stock trading firms are not only competing against traditional full service brokerages but also amongst themselves. The online investor is now reaping the benefits of increased competition. The average commission during the last quarter of 1997 had fallen to \$ 15.95 compared to \$52.89 in the first quarter of 1996 (Dreyfuss 1998). A list of 12 US online trading firms and their charges per trade is given in Table 1. These firms account for 90% of all trading accounts on the web.

ECONOMY

Another reason for the success of online trading systems is the state of the US economy. The US stock market has grown over 20% in each of the last three years (1994-1997). Individual investors have seen their investment grow at a rate rarely seen in the past. This growth has attracted new, as well as, smaller investors to the stock market. These new entrants have embraced the low fees charged by online brokerages. Moreover, with increased amounts of information, including market data, company data, analysis, and reports available on the Internet, even the price-sensitive investor has moved to the online broker.

LIMITATIONS

Online stock trading systems have limitations. The two important limitations are discussed below: (1) The capacity of online systems, and (2) the cost and quality of customer support services.

CAPACITY

On one November day in 1997, when the New York Stock Exchange Dow Jones Stock Index plunged approximately 550 points, the trading volume on all major stock exchanges in the US was more than 50% above the daily average. Due to this unusually heavy traffic, a large number of online trading customers could not access the web sites of their brokerages. Most online trading brokerages should

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enhance their systems to provide services to their customers on these high volume days.

CUSTOMER SUPPORT SERVICES

Although trading is performed over the Web, some important transactions like opening an account and confirming payment, are generally done by calling the brokerage's customer service center. A large number of online trading services are very poor in replying to email inquiries from their customers, and customers find themselves calling the customer service center. These centers are operated by company personnel, and the labor costs associated with operating such centers are high.

CONCLUSION

In this paper we have investigated the role of electronic contracting in online brokerage services in the US. In addition, we have looked at the reasons for their success and limitations they will have to overcome for continued growth.

On the whole, the future of the online broker looks bright. There are some critics of the present system who think otherwise. Some question the viability of online brokerages at current price-levels for placing trades. They argue that due to competition companies are charging prices which will not allow many of them to survive. But, as we have seen in this paper, the present state of the online stock trading systems provides valuable lessons for other electronic commerce and electronic contracting systems.

Table 1  
Top US Online Brokers

Web Site	Brokerage	Price per trade in US dollars (market orders)*
<a href="http://www.ameritrade.com">www.ameritrade.com</a>	Ameritrade	8.00
<a href="http://www.datek.com">www.datek.com</a>	Datek Online	9.99
<a href="http://www.discoverbrokerage.com">www.discoverbrokerage.com</a>	Discover Brokerage Direct	14.95
<a href="http://www.dljdirect.com">www.dljdirect.com</a>	DLJDirect	20.00
<a href="http://www.etrade.com">www.etrade.com</a>	Etrade	14.95
<a href="http://www.fidelity.com">www.fidelity.com</a>	Fidelity Investments	14.95
<a href="http://www.ndb.com">www.ndb.com</a>	National Discount Brokers	14.95
<a href="http://www.quickwaynet.com">www.quickwaynet.com</a>	Quick & Reilly	14.95
<a href="http://www.suretrade.com">www.suretrade.com</a>	SureTrade	7.95
<a href="http://www.schwab.com">www.schwab.com</a>	Charles Schwab	29.95
<a href="http://www.waterhouse.com">www.waterhouse.com</a>	Waterhouse Securities	12.00
<a href="http://www.webstreetsecurities.com">www.webstreetsecurities.com</a>	WebStreet Securities	14.95

\*Prices are as of June 20, 1998, and are subject to change. Prices vary for limit orders. Restrictions on number of shares and a required minimum of trades may apply.