

Investor Response to Online Stock Trading: A Study Using Q Methodology

Byung S. Lee, Ph.D.

Wonhi Synn, Ph.D.

Elon University

***Abstract:** After the introduction of online trading, some investors adopted it while others stuck to their full-service brokers. This research employed Q methodology to identify different groups and why they responded differently to the same innovation of online trading. The respondents were 26 adults — 24 investors and 2 non-investors — who sorted a 40-statement Q sample. Analysis revealed 4 groups — 3 factors, or types, with 1 factor being bipolar. Factor 1, long-term investors, sought expert advice because they did not feel confident in their own judgment and research skills, but would like to be involved in online trading in the future. Factor 2 wanted to invest online for empowerment and fun. Factor 3, a bipolar factor, had a group that distrusted full-service brokers and wanted to save transaction costs through online trading, while capturing gains from daily price fluctuations. Another group under Factor 3 was composed of staunch supporters of full-service brokers. These 4 groups seemed to fit into the stages of the innovation-adoption process that diffusion theorists have propounded. Empowerment and fun were important elements attracting investors to online trading along with price and trust. Privacy, anonymity, and protection of investor assets were not important. Gender and the frequency of stock trading seemed to be type determiners, but age, occupation, time of initial stock purchase, or size of portfolio did not.*

Introduction

The investment environment has been improved for individual stock traders during the last 70 years because of legal reforms and technology changes. Since the New Deal, the government eliminated many unsavory practices of the securities business, and new technology brought more efficiency into the stock market. At the same time, investors' perception of stocks as a type of investment has improved in the 20th century. Any stock investment was considered an aggressive, perhaps even speculative, behavior for individuals in the early decades of the last century. Now, investors who simply want to do

Authors' addresses: Elon University, Elon, NC. 27244; Lee, Department of Journalism and Communications, School of Communications, byunglee@elon.edu; Synn, Department of Accounting and Finance, The Martha and Spencer Love School of Business; synnwo@elon.edu.

Operant Subjectivity, 2001 (April), 24 (3): 109-131.

better than the average of a representative sampling of stocks are deemed conservative, whereas those who invest in companies of great potential growth with little earnings are considered speculative (Ray 2000, Chs. 1-2).

The advent of the World Wide Web opened a new way for individual investors to buy stocks without the advice of full-service brokers. The number of online accounts increased from 4 million in 1997 to 18 million in 2000, while off-line brokerage accounts stood at 60 million in 2000 after having been stable or declining since 1997 (NYSE 2000, 61). Among investors surveyed for the Securities Industry Association, 20% reported trading securities via the Internet in 2000, an increase from 18% in 1999, 10% in 1998, 8% in 1997, and 7% in 1996 (Yankelovich 2000, 4, 41).

In response to the growing popularity of online trading, innumerable books and articles have been published on how to research and trade stocks online, advantages and disadvantages of online trading, concerns about online trading, or anecdotes of online traders. But there is not much data on why people were attracted to online trading from the online traders' viewpoint. This study investigated why some investors went to newly-emerging online companies for stock trading while others remain with traditional brokers, especially full-service brokers. This study would help both traditional and online brokerage firms joust for market position in order to keep or expand their market share in response to investors' interest in online trading. By better understanding the nature of online stock traders, the securities industry also could make online trading strengthen the financial market, rather than harming it.

Literature Review

Clarke (1998) suggested that online companies should address at least 5 issues to be successful in electronic commerce: 1) price or reluctance of consumers to pay for what they get via the Internet; 2) trust; 3) the privacy of personal data; 4) identification, anonymity, and pseudonymity; and 5) consumer protections. This study examined first whether these issues have been handled appropriately in online stock trading.

Price

Free services historically dominate electronic bulletin boards and newsgroups, so people are reluctant to pay for what they use via the Internet, especially digital goods and services. As a result, many Internet companies rely on advertising and sponsorship instead of user fees (Clarke 1998). In the stock market, the Internet has spawned a new class of so-called "discount brokers," who offer stock trading services for unprecedented low commission rates by eliminating brokers as middlemen.¹ Cutthroat competition among e-brokers

¹ The Securities Industry Association counted about 200 online trading firms, all of which have sprung up in the last four years (Dabaie 2000).

brought fees for buying and selling securities lower than ever, though most services for securities transactions are not free.²

Trust

Individuals, all else being equal, choose to deal with those of known reputation or those with whom they have had previous dealings (Palmer, Bailey, and Faraj 2000). New online companies, when they are still building reputations, try to distinguish themselves through branding. They create an image to evoke familiarity among the audience through traditional advertising as well as Internet promotions, such as banner ads, e-zine sponsorships, newsletters, opt-in e-mail, and newsgroups (*Branding*). Online brokers need more than recognition to turn investors into clients; they need to earn trust by providing satisfactory products, infrastructure, and services.

Products

The number of financial products available online has increased. For example, Charles Schwab, Inc., which handled nearly a third of all online trade in 1998, knocked down the wall between its online business and its 5 million regular account holders, giving everyone access to the firm's entire range of services. Services for a lowered commission of \$29.95 included round-the-clock, dial-up brokers and technical support, and a financial supermarket that offered 1,500 different mutual funds (Greenwald et al. 1998).

Infrastructure with security, reliability and speed

A service product cannot be adopted without proper infrastructure (Walsh and White 2000). This is also true of online trading where *security, reliability, and speed* are vital for consumer trust and loyalty.

Many online investors are concerned about the security of Internet transactions: for example, the integrity of information, secure payment mechanisms, and communication/information free from interception and misrepresentation (Williams, Whalley, and Li 2000). Investor concerns could be alleviated with development of new technology that would bring not only more security but enhanced network reliability and speed as well (Greenwald et al. 1998). The speed of stock transactions on the Internet is improved over that through traditional channels, not only because of faster networks, but also because there are fewer individuals between the investor and the final site where bids and offers meet to complete a transaction. Further automation could also lower the transaction cost (Sarkar, Butler, and Steinfield 1996). In an effort to earn client trust, Datek offers free real-time stock quotes and

² Price wars in 1997 slashed the average commission at the 10 largest e-firms from \$34.65 to \$15.95 a trade while standard off-line discounters charged more than \$50 a trade. Some Internet discounters began to charge less than \$10, and Web Street Securities charged nothing for trades of more than 1,000 shares of NASDAQ stocks (Greenwald et al., 1998). E*Trade even offered \$75 for a new account, and charged no fees for opening and maintaining an account in 2000.

promises to execute trades within 1 minute or refund the commission (Greenwald et al. 1998).

Information and portfolio management service

To attract and hold customers, online companies have built one-stop-shopping, providing news and data about stocks, mutual funds and other financial securities. Most sites include links to resources such as *Big Charts*® or *StockTools*® that promptly plot the lines (Greenwald et al. 1998). Also there are innumerable free Internet sources for investors, such as online investor tutorials, FAQ sources, financial news, scholarly journals, electronic newsletters, and even investment simulation games (Sindell 1999, Ch. 2). After investors purchase stocks, they need to keep track of their portfolio performance in comparison with their financial goals and react quickly to changing market conditions. Many online portfolio-tracking services are available on the Internet or are offered as computer software programs (Sindell 1999, Ch. 16).

In response to services available to online investors, full-service brokers contend that they can provide expert advice and personal service (Emerson 1999). Other related services, such as advice on how to deal with the quick buildup of tax liabilities generated by short-term trades are offered by some (Jurek 1999). They argue that the biggest hazard of e trading is trading itself, and the ability to buy and sell instantly should not be confused with investing. Some people have neither the time nor the confidence to manage their portfolios (Greenwald et al. 1998), because being a skilled investor is a full-time job (*Online Investing* 1999). The brokers recommend that investors who fear new technology “talk to a live body” (Jurek 1999).

Privacy, identification, and investor protection

By using trusted third parties and/or privacy statements, online brokers have tried to increase consumer confidence and loyalty. Anonymity must be guaranteed, since investors, individual and institutional, would like to hide their actions in order to buy and sell stock at the best price. Online trading companies secure transactions over the Internet by offering data encryption and requiring a unique user identity and password when the investor logs on. They also provide clients further safety if they fail to achieve web security.³

In contrast to Clarke’s approach, which focused on the provider of products and services, Ray (2000) and Turner (2000) discussed the benefits and drawbacks of online trading in general from the traders’ viewpoint. But

³ In the case of E*Trade, to give investors assurance about web security, the company automatically protects each account up to \$100 million free of charge. The Securities Investor Protection Corporation (SIPC) provides up to \$500,000 of coverage (limited to \$100,000 for cash), and National Union Fire Insurance Company of Pittsburgh, PA, provides an additional \$99.5 million of coverage on securities, including an additional \$900,000 for cash claims (*Steel vault* 2000).

their approach did not deal with the range of investor responses to the innovation of online trading.

Innovation-diffusion scholars shed light on this issue by finding that attributes of innovations could appeal differently to users at different stages of the innovation adoption process. Rogers and Shoemaker wrote (1971, 138), “It is the receivers’ perceptions of the attributes of innovations, not the attributes as classified by experts or change agents.” The effects of various attributes of online stock transactions differ, since traders are not uniform in their background, financial goals, and experiences with traditional brokers. Walsh and White (2000) found that the appeal of using a new technology differs for various groups, because “each group adopts the new technology based on a cost benefit trade-off specific to that cohort.”

Some people who saw benefits early may have made great progress in the innovation adoption process, while others may be left behind. According to Rogers (1995, Ch. 5), an individual progresses through 5 different stages in the innovation-decision process model:

- (1) From first knowledge (awareness) of an innovation
- (2) to the persuasion (attitude formation and change) stage,
- (3) to a decision to adopt or reject the innovation,
- (4) to implementation of the new idea,
- (5) to the confirmation (reinforcement for the adoption or rejection of a prior decision) stage.

This study focused on finding different cohort groups, or factors, and discovering why they responded differently to the innovation of online stock trading. Each factor was then located in the 5-stage model proposed by the innovation diffusion scholars.

Methods

Q methodology was employed as an appropriate analytical tool, since Q sorting enables “measurement of anything subjective to the person.” The methodology provides a “basis for measurement of feelings, attitudes, opinions, thinking, fantasy, and all else of a subjective nature” (Stephenson 1967, 11).

A structured Q sample was prepared from a concourse of 263 statements obtained in an extensive review of online and offline articles, books, and comments from stock investors and non-investors who were surveyed in April 2000. The first group of statements represents the position online investment supporters would take; the second group of statements reflects the position of those who would favor full-service brokers.

The 2 groups of statements were further divided into 6 subgroups of “nature of stock trading,” “risk,” “self-study,” “attitudes towards brokers,”

“attitudes towards online trading,” and “professional assistance.” Then, these statements were reduced to a 40-statement Q sample (Appendix), so that each cell contained at least 2 statements. Some subgroups had more statements than others, reflecting the complexity of issues the subgroups represent. “Risk” and “Self-study” for information are something online investors need to embrace in return for savings in transaction costs. “Attitudes towards brokers,” “Attitudes towards online trading” and “Professional assistance” are related to the trust issue. Clarke’s other 3 issues critical for online success — privacy, anonymity, and consumer protections — were barely blips on the radar among the respondents.

Q Sample Structure

Topic	Online traders	Full-service supporters
Nature of stock trading	1, 3	2, 4
Risk	5, 7, 9	6, 8, 10
Self-study	11, 13, 15, 17	12, 14, 16, 18
Attitudes towards brokers	19, 21, 23, 25, 37, 39	20, 22, 24, 26, 38, 40
Attitudes towards online trading	27, 29, 31	28, 30, 32
Professional assistance	33, 35	34, 36

The Q sort was administered to 26 people during May, June, and July 2000. They successfully sorted 40 statements on a 9-point most-agree/most-disagree scale.

Q Sort Distribution

-4	-3	-2	-1	0	1	2	3	4	Score
3	4	4	5	6	5	4	4	3	Frequency

Among 26 people, there were 5 senior students majoring in business, a stockbroker, CPAs, retirees, professors, a clerk, managers, a day trader, a business owner, a librarian, a computer consultant, and others. All but 2 respondents have had stock investment experience. One started investing in stocks in 1950s, 2 in 1970s, 7 in 1980s, 12 in 1990s, and 2 in 2000. The frequency of their stock trading ranged from everyday to never. Among 23 people who responded to the extent of stock investment, 5 said “a lot” of money invested; 8, “a moderate amount”; another 8, “a little”; and 2 indicated “no” investment. The sorters, 18 males (69%) and 8 females (31%), varied in age: Two people were in their 70s; 1 in 60s; 8 in 40s; 9 in 30s; and 6 in 20s.

Responses were entered into the MQMethod program for Macintosh,⁴ which intercorrelated individual responses to each statement in a 26 × 26 correlation matrix. Factors were extracted using the principal component solution. Varimax rotation was used to produce simple structure. A 3-factor solution was selected based on ease of interpretation, with 25 people aligned significantly with 1 of 3 factors and 1 person, with 2 factors.

Results

Three interpretable factors were extracted, accounting for 49% of variance in the respondent set. Only weak correlations were found between factors. Six consensus statements emerged that all 3 factors ranked similarly. Z-scores were converted into Q sort rank scores by averaging all the Q sorts significantly loaded on each factor into a single Q sort (Brown 1980, 23).

Correlation between Factors

	F1	F2	F3
F1	1.00	—	—
F2	0.16	1.00	—
F3	-0.28	0.18	1.00

Respondents in 3 factors all seemed to agree on the merits of online trading: real-time quotes that are often free and low access fees for research, information and stock-screening tools (Statement 17), and convenient transactions using computers (29). They disagreed with 1 statement negative to online trading (20), which mentioned the possibility of paying higher prices through cyberbrokers than elsewhere.

On the other hand, sorters seemed to agree on the disadvantage of using human brokers who may not be available, especially after market hours (31), and tended to disagree with 2 statements favorable to the brokers (26, 33).

This study attempts to describe the factors through “interpreting statements which characterize the factor, i.e., statements scored +4, +3, -3, and -4” (Brown 1980, 23-4). These statements also were checked to see whether they distinguished each factor from others.

Factor 1: Long-Term Investors Who Seek Expert Advice

Nine sorters — 6 males (33% of male respondents) and 3 females (43% of female respondents) — were aligned solely with this factor, explaining 19% of variance, a little larger than the other 2 factors. Ages ranged from 21 to 78.

⁴ MQMETHOD is a public domain freeware program, which readers can retrieve from the following website: <<http://www.rz.unibw-muenchen.de/~p41bsmk/qmethod/addfls.htm>>. The program is also available in PC and Unix versions at this URL.

Consensus Statements

No.	Statements	Factor Scores		
		1	2	3
17	Now, not only can real-time quotes be found on web sites, but they may even be free. Sophisticated charting, research, and stock-screening tools abound. And the price of access to all of this information is getting lower and lower.	2	2	3
20	Cyberbrokers don't always get customers as good a price as full service brokers, because the online brokers may have contracted to steer customer trades toward a specified market maker willing to pay a few pennies per share traded.	-1	-2	-1
26	It is good to do it face to face when trading stocks. I can trust the transaction when I can look at a broker and see his or her character.	-2	-3	-3
29	Using a computer, I can execute my own trades at any place I feel comfortable.	2	1	2
31	Full service brokers may not be available all the time, especially after market hours.	2	2	1
33	I believe a large investment would warrant professional advice or full commissions, while small sums of money would not.	0	-1	-2

Only 1 of 5 college students majoring in business belonged to this group, with his college-tuition funds mostly invested in mutual funds. Three college professors teaching accounting, information systems, and music, all belonged to this factor. Trading experience varied greatly in the respondent group. One sorter started to purchase stocks in 1978, another as recently as 2000, with the remainder in between. Three owned "a little amount" of stock, 4 "a moderate amount", and 2 "a lot." They mostly traded stocks a few times a year.

In the tables of statements about which Factor 1 has strong feelings, those distinguishing Factor 1 from all others are marked with ** (2, 3, 6, 10, 11, 13, 14, 15, 25, 34, and 39). The group was interested in long-term investing and traded only a few times a year (2). They did not check stock prices every day to take advantage of fluctuations in the market (1, 3). Sorter 20 commented on Statement 1, "I don't spend a lot of my time checking the market during the day. If there is a big dip, I usually hear about it on the evening news."

This group agreed that finding information was easy, but separating the wheat from the chaff was arduous and difficult work (14). Sorters in this group did not feel much confidence in their judgment and research capability (11),

and understood their need for advice from full service brokers (25). Sorter 24 commented on Statement 15, "You cannot possibly research or have the resources that a broker does." Despite the availability of information on the Internet, they did not agree that all people could research well enough to choose winning stocks (13). They warned other investors against having an illusion of being a millionaire quickly (10) and recommended pre-trade training and a warning for online investors (6). Sorter 24 commented on Statement 10, "If you are not experienced in stock trading and you are an online trader, then you are as likely to win [as] in Las Vegas."

So they would like to seek investment tips from outside experts, even though it would generate expense (15), especially if larger investments were at stake (34). Sorter 20 commented on Statement 33, "I'm a strong believer in having a professional help me with my larger sums of money, which is basically my retirement accounts." People in this group did not think brokers

Factor 1: Strongly Agree

No.	Statement	Factor Score
14**	Finding information is easy — it's filtering it that's hard. There is a lot of garbage and hype.	4
6**	Considering the number of people who are trading online and the amount of money they are placing at risk, some level of pre-trade training or a warning on cyber-investing does seem advisable.	4
34**	For some larger investments, I would feel more confident after talking to a stockbroker who has more knowledge than I do.	4
35	If I need help with assessing my own financial needs and picking my own investments, I would go to a neutral advisor, like a fee-based financial planner, who is paid for recommendations, not for stock trading.	3
39**	I do not feel completely comfortable with my own abilities and would like to learn and observe the processes through someone like a broker with knowledge and experience. However, as I become more knowledgeable, I most likely would look into trading online.	3
10**	Online stock trading holds out the illusory promise that glamour and wealth are just a few keystrokes, maybe a mere mouse click, away.	3
2**	Because I am interested in long-term investing, I just trade a few times a year.	3

Note: ** Indicates a distinguishing statement for this factor at a significance level of $p < 0.01$.

were exploiting them (19). They leaned towards a neutral advisor, such as a fee-based financial planner, for financial tips though, because they are paid for advice, not for the number of transactions (35).

While those on Factor 1 would like to get help from experts, most were likely to trade online as they accumulated knowledge and experience in stock trading (39). Sorter 18 commented on Statement 7, "I think it would be fun and a great learning experience to trade on-line. I plan to open a small account this summer, after I've done some homework and try it out."

Factor 1: Strongly Disagree

No.	Statement	Factor Score
25**	I do most of my own analysis. I don't need the "hand-holding" that a full service broker provides.	-4
1	I check stock prices two, three, or more times a day, hoping to capture gains from the market's ups and downs.	-4
11**	I feel confident in my judgment and research capability.	-4
15**	Nowadays, I can do my own research so I don't feel it is necessary to pay someone a lot of money for what I can do myself.	-3
13**	I feel any person should be able to research enough information to choose well-performing stocks. This is especially true with the ever-growing use of the Internet.	-3
3**	I am not buying stock of a company because it has a good product or good management! I'm here trying to be the first in when I think its stock price is going up right now!	-3
19	Brokers are so nice, but boy, they are robbing me.	-3

Note: ** Indicates a distinguishing statement for this factor at a significance level of $p < 0.01$.

Factor 2: Experimenters for Fun and Empowerment

Eleven sorters — Eight males (44% of responding males) and 3 females (43% of females) — were aligned with this factor, explaining 17% of variance. Their ages ranged from 21 to 70. Among 5 business students, 4 belonged to this group. This factor also included a retired businessman, 1 homemaker, and 1 computer consultant working at home. The most experienced investor began in 1950, the least in 2000. The amount of their investments varied from "no" to "a little," "a moderate amount" or "a lot." Factor 2 sorters traded stocks more often than Factor 1.

Factor 2 sorters were significantly different from others in their strong feelings about Statements 3, 4, 5, 7, 11, 13, 14, 18, 28, and 36. These

distinguishing statements are marked with * or ** in the Factor 2 tables. Sorters on this factor invested money for the values of a "physical" company — its products, employees, management and location (4). So this factor did not chase after fluctuations in companies' stock prices for short-term profits (1, 3). Sorter 9 commented on Statement 4, "I am investing, not speculating," in companies which have potential to grow. Company performance is the key factor affecting the decision on stock trading. Sorter 3 emphatically commented on Statement 1, "Day trading is not for me!"

The investing philosophy of sorters on Factor 2 appears to be the pursuit of fun while exploring to learn independently about stock trading (7). If their investments went sour, Factor 2 sorters would take responsibility, instead of blaming other people (5). Sorter 9 commented on Statement 5, "If you know nobody can predict the movement of the stock market, how can you blame somebody for wrong advice?"

Factor 2 sorters admitted that separating essential information from garbage and hype is not easy (14). But, they felt as confident in their judgment and research capability as in that of others (11). They felt anybody should be able to choose stocks that would perform well, especially with the information available on the Internet (13). They seemed to have the time and online skills

Factor 2: Strongly Agree

No.	Statement	Factor Score
4**	The essence of a company's identity has to do with what it makes, whom it employs, how it is managed, where it is based.	4
5**	If I took bad advice, I hold myself responsible for having taken it, and I would not blame the person who gave it to me.	4
13*	I feel any person should be able to research enough information to choose well-performing stocks. This is especially true with the ever-growing use of the Internet.	4
9	The Internet is very much an empowerment for the consumer and gives the consumer the ability to shop and purchase stocks on his or her own.	3
7**	Like life itself, if you've got the capacity to learn and to be prudent, it ought to be fun to explore and see what comes out of stock trading.	3
11**	I feel confident in my judgment and research capability.	3
14**	Finding information is easy — it's filtering it that's hard. There is a lot of garbage and hype.	3

Note: * Indicates a distinguishing statement for this factor at a significance level of $p < 0.05$; **, at $p < 0.01$.

needed to research stocks (18, 28). They saw the Internet as an empowerment tool that enables consumers to buy stocks on their own (9).

Factor 2 sorters did not distrust brokers (19), but they didn't necessarily believe that meeting with brokers in person would develop more trust in them (26). They believed that the Internet could replace in-person consultation (36).

Factor 2: Strongly Disagree

No.	Statement	Factor Score
3**	I am not buying stock of a company because it has a good product or good management! I'm here trying to be the first in when I think its stock price is going up right now!	-4
18**	Spending time researching stocks or staying up on the market is quality time not spent with family, friends, or doing things that I would enjoy.	-4
28**	I'm not confident in my online skills. I'd hate to punch in "100" meaning 100 shares, and later find (in the fine print) that the unit of purchase is 100 shares, ending up with 10,000 shares.	-4
1	I check stock prices two, three, or more times a day, hoping to capture gains from the market's ups and downs.	-3
26	It is good to do it face to face when trading stocks. I can trust the transaction when I can look at a broker and see his or her character.	-3
19	Brokers are so nice, but boy, they are robbing me.	-3
36**	The Internet just can't replace a flesh-and-blood broker's counsel. Investors would like to have ongoing advice and service.	-3

Note: ** Indicates a distinguishing statement for this factor at a significance level of $p < 0.01$.

Factor 3: Online Trading Adopters and Rejecters

Factor 3, the least popular factor, was bipolar. Three men, a day trader, an engineer/manger, and a manger in a finance pricing department, were on the positive side of this factor (3-Pos); while a female CPA and a male stockbroker were on the negative side (3-Neg).

The 3 individuals in Factor 3-Pos have purchased stocks for many years. One 46 year-old owned a lot of stocks and traded daily; a 30 year-old owned a moderate amount and traded 40 times a year; a 32 year-old who owned a little stock rarely traded.

Factor 3-Pos checked stock prices 2, 3, or more times a day, hoping to capture gains from daily fluctuations (1, 2). They were interested in

purchasing stocks at the lowest cost, not concerned about who conducted the transaction (23). Sorter 13 commented on Statement 33, "Full-commission brokers do not guarantee better profits. We can get professional advice cheaply on the Internet. We don't have to pay high commissions to the full-commission brokers." This attitude applied to large investments as well as small ones (34). They welcomed free real-time quotes on web sites and sophisticated research assistance available there at an ever-decreasing cost (17). Since sorters on this factor had the time and believed they could do their own research, they did not feel it was necessary to pay someone a lot of money to find the information for them (15, 16, 25).

Sorters on this factor distrust brokers, because they do not believe the brokers give advice with their clients' best interest in mind (21). For example, Sorter 25 commented on Statement 15, "I feel brokers are only going to closely monitor their top accounts, not average investors." Sorters on Factor 3-Pos would neither meet with brokers (26) nor use brokers to discuss retirement and tax options when they invest (24). Some investors avoid brokers because they feel online transactions are faster (27), rejecting the notion that online brokers encourage investors to trade speculatively by instilling overconfidence (22). They believe the Internet can replace a live broker (36).

Among these short-term investors were experienced individuals, like Sorters 13 and 25, who traded frequently, and an inexperienced investor (Sorter 21), who rarely traded and had only a small amount of stock. Sorter 21 thought that online trading would provide him with opportunities to earn millions of dollars quickly. He commented on Statement 10 that (online stock trading's illusory promise that glamour and wealth are a just a few strokes away, maybe a mere mouse click away) was "the epitome of online investing." He also commented on Statement 5, "I would hold the person accountable for the advice; especially a broker."

One of the 2 sorters loading on Factor 3-Neg was a stockbroker⁵. He pointed out the merits of retaining stockbrokers and commented on Statement 21 that if brokers suggest products without knowing their clients' needs and goals, "they have broken the law and their license can be revoked. ... Statement #21, as written, is absurd." He also added a comment on Statement 36, "The Internet, for most people, will never take the place of 'flesh-and-blood' relationships. ... A broker-client relationship is much like a marriage. Ideas are discussed and a team is formed with the investor's goals and objectives being put in the forefront."

The other sorter on Factor 3-Neg was a CPA. She was a staunch supporter of full-service brokers, who had no extra time to sit at a computer and thought

⁵ Factor loadings indicate the extent of the correlations between each sorter and factor. The negative numbers -0.75 and -0.61 in the Appendix indicate that Sorters 12 and 26 are negatively related to Type 3 (Norusis 1988, 133).

that online trading did not provide enough security. So she left all investment decisions up to her broker. She also agreed with Statement 24, saying, "My broker is good, and takes care of everything to my satisfaction." Her comment on Statement 12, "Brokers can advise, but the ultimate decision is the investor's," indicates that she takes ultimate responsibility for her investments.

Factor 3: Strongly Agree

No.	Statement	Factor Score
23**	The main purpose is to purchase the stock. I do not care who does this as long as it gets done. Purchasing stocks online saves me money on commissions.	4
15**	Nowadays, I can do my own research so I don't feel it is necessary to pay someone a lot of money for what I can do myself.	4
21**	The broker's advice is not given with your best interest in mind.	4
27**	It is faster to simply point and click, rather than to wait to speak with a broker for stock trading.	3
25**	I do most of my own analysis. I don't need the "hand-holding" that a full service broker provides.	3
17	Now, not only can real-time quotes be found on web sites, but they may even be free. Sophisticated charting, research, and stock-screening tools abound. And the price of access to all of this information is getting lower and lower.	3
1**	I check stock prices two, three, or more times a day, hoping to capture gains from the market's ups and downs.	3

Note: ** Indicates a distinguishing statement for this factor at a significance level of $p < 0.01$.

Discussion

A 3-factor solution seemed to fit the data eliminating only 1 sorter from analysis, and minimizing the overlap among the 3 factors. Consensus statements indicated similarities among Factors 1, 2, and 3-Pos, showing that they all leaned toward online trading and had reservations about traditional full-service brokers. They agreed with 2 statements favorable to online trading (17, 29), and disagreed with 1 unfavorable statement (20). These factors also disagreed with 2 statements favorable to full service brokers (26, 33) and agreed with 1 negative statement (31). Most of the consensus statements, however, were not salient, as shown by their rank scores in the middle. Factor 3-Neg, was a mirror image of Factor 3-Pos, expressing opposite opinions.

Analysis of the differences in sorting patterns among the factors showed that the characteristics of these factors were related to stages in the innovation-decision process propounded by innovation theorists (Rogers 1995).

Factor 3: Strongly Disagree

No.	Statement	Factor Score
36**	The Internet just can't replace a flesh-and-blood broker's counsel. Investors would like to have ongoing advice and service.	-4
24**	I like to use my broker when discussing best retirement and tax options for investing.	-4
16	I can probably make more money by focusing on my business than spending time researching stocks.	-4
22**	Online brokers often encourage investors to trade speculatively. Some of their advertisements reinforce cognitive biases, such as overconfidence.	-3
26	It is good to do it face to face when trading stocks. I can trust the transaction when I can look at a broker and see his or her character.	-3
2	Because I am interested in long-term investing, I just trade a few times a year.	-3
34**	For some larger investments, I would feel more confident after talking to a stockbroker who has more knowledge than I do.	-3

Note: ** Indicates a distinguishing statement for this factor at a significance level of $p < 0.01$.

Factor 1, the long-term investment group, knew about too many difficulties to implement online trading (1, 2, 3) — the *information* stage in the innovation-decision process. These sorters perceived only: the availability of abundant, but unprocessed, information (14), their own lack of expertise (11, 15, 25), and risks (6, 10). They decided to invest traditionally through full-service brokers. Factor 1 trusted in stockbrokers, even though broker services meant higher fees (19, 34). However, Factor 1 was not totally blind to other possibilities, such as using help from a neutral adviser, like a fee-based financial planner (35), or trying online trading when they become more knowledgeable (39). Since these sorters began to form a favorable attitude toward the innovation, they seemed to have gone past the information stage to the verge of the *persuasion* stage.

Factor 3-Pos saw a problem with the old full-service technology (21) and many merits of online trading from their standpoints (17, 23, 27, 15, 16, 25).

This factor checked stock prices frequently to pursue short-term gains from price fluctuations in the market (1, 2).

Factor 3-Pos dumped the old technology to adopt a new one and would like to implement its decision (24, 26) even in large investments (34). There is a barrier between the *decision* stage and the *implementation* stage. As Rogers said, "It is often one thing for an individual to decide to adopt a new idea, but quite a different thing to put the innovation to use (Rogers 1995, 173). For Factor 3-Pos investors, implementation is related to the amount of money for investments⁶.

All Factor 3-Pos investors had similar opinions about online stock trading, but implementing those opinions would require more than just a belief that one method is better than another. They would also need extra money to make investments and a lot of confidence that their opinions were correct. Factor loadings (Appendix) showed that Sorter 13, who was a day trader with a lot of money to invest, was most highly loaded on Factor 3 (0.73). Sorter 25, who had a moderate amount of investment money and traded around 40 times a year, had a factor loading of 0.67. Sorter 21, who had a little money and rarely traded, had a factor loading of 0.53. This seems to indicate that their behavior was positively related to the strength of their opinions.

Price and trust in the online trading mechanism attracted Factor 3-Pos to online trading. This factor would enjoy lower transaction costs and could rely on online trading, because of abundant information on stocks, sufficient individual research skills, and fast transactions. These investors easily abandoned full-service brokers whom they mistrusted. Empowerment and fun were identified as additional elements to draw investors to online trading. Factor 3-Neg, which consisted of the staunch supporters of full-service brokers, is an innovation rejecter, a mirror image of an innovation adopter.

Factor 2 investors wanted to take stock trading into their own hands for empowerment (5, 9) and fun (7). They did not necessarily dislike brokers (19), but thought they had the time, the confidence in their research skills, and the judgment to separate essential relevant information from garbage on the Internet (13, 11, 18, 28). Factor 2 favored online trading, and believed that the Internet could replace flesh-and-blood brokers (36). Persons on Factor 2 were attracted to online trading for fun and empowerment, not because they distrust full-service brokers or to save money. The original concept of online trading was to increase efficiency by substituting the online mechanism for the middleman, resulting in consumer savings. The idea of an innovation "changes and evolves during the diffusion process" (Rogers 1955, 174). Factor 2 seemed to adapt the original idea to accommodate its needs.

⁶ Factor 2 investors also traded more often when they had more stock shares.

In this study, 2 of the 5 elements Clarke identified as important to success in e-commerce, *price* and *trust*, seemed to be salient attributes of online trading. The other 3 elements, *privacy*, *anonymity*, and *investor protection*, appeared less important. This might happen because financial organizations traditionally have well protected privacy and anonymity of investors; online companies have achieved high web security; and the Securities Investor Protection Corporation (SIPC), as well as others, has insured investor assets should online companies go bankrupt.

Do these findings cast a pall over full-service brokers? For Factor 1, the steepness of their individual learning curve, along with their performance in the stock market, will determine how quickly and extensively investors act on and maintain their inclination toward online trading. For Factors 2 and 3, many must yet move beyond the mental stage of decision to the actual implementation stage to threaten full-service brokers. This transition seems to require extra money as well as strong confidence in their beliefs. Even after they enter the implementation stage, they would have to go through the theoretical *confirmation* stage described by Rogers, during which they could change their positions. Some skeptics become dissatisfied and discontinue use of an innovation they have adopted (Rogers and Shoemaker 1971, 27).

Because investors saw a market downturn, especially since the second half of 2000, another research study could be done to see how the changed market circumstances could affect investor behaviors and attitudes. For example, a desire to earn profits might not be salient to Factor 2 in the booming bull market because profits were assumed, so their Q sorts emphasized only fun and excitement. Facing a bear market, they could be driven back to the reality that independent stock trading could risk their investments.

Participants in this study were not selected to represent the entire trading population; so findings cannot be generalized. Results shown in the following table, however, suggest another potential avenue for investigation. Females were more likely to support full-service brokers. Factor 3-Neg, containing 14% of all females loading on a single factor, and 6% of all males, was most supportive of full-service brokers. Factor 1 ranked next in broker support, with 43% of the females and 33% of the males. Factor 2 was somewhat less supportive of brokers, and Factor 3-Pos exhibited least broker support.

Percent Distribution of Gender by Factor

Gender	Factor			
	1	2	3-Pos	3-Neg
Male	33% (6)	44% (8)	17% (3)	6% (1)
Female*	43% (3)	43% (3)	0% (0)	14% (1)

*One female mixed loader was omitted from calculations.

Age did not predict the investor type, though Factor 2 tended to embrace young people, such as 4 out of 5 senior students. Occupation, the time of initial stock purchasing, or the size of stock portfolio was not a determinant, even though the size of a portfolio could influence frequency of stock trading. When investors traded frequently, they were likely to belong to Factor 3-Pos.

Conclusions

This study found 4 groups of investors with different attitudes towards online trading: Factor 1 investors preferred full-service advice because they did not feel confident making independent trading decisions, but would try online trading if they became more knowledgeable. Factor 2 supported online trading for empowerment and fun.

Factor 3-Pos adopted online trading, feeling confident in decision-making and seeing no merit in retaining full-service brokers. Factor 3-Neg staunchly supported full-service brokers, because of satisfaction with past performance, and because they did not have time to do their own research. The diffusion of innovation theory helped put in perspective the differences among 4 groups.

Empowerment and fun turned out to be important elements attracting investors to online trading along with price and trust, but privacy, anonymity, or protection of investor assets did not. Gender and the frequency of stock trading seemed to be type determiners, but age, occupation, the time of initial stock purchasing, or the size of portfolio did not. This study employed Q methodology to measure opinions and attitudes of stock investors. The methodology was well suited for finding out different types of stock investors and the elements that influenced stock investors on the different adoption stages of online stock trading, such as price, trust, fund and empowerment.

References

- Branding, branding ... everywhere. <<http://www.hostamerica.com/affiliate/brandart.html>> (April 2, 2000).
- Brown, S.R. 1980. *Political subjectivity: Applications of Q methodology in political science*. New Haven, CT: Yale University.
- Clarke, R. 1998. *Key issues in electronic commerce and electronic publishing*. November 22. <<http://www.anu.edu.au/people/Roger.Clarke/EC/Issues98.html>> (April 8, 2000).
- Dabaie, M. 2000. SIA: Skyrocketing volumes, soaring e-trading close the decade. *Securities Industry News* 12(1): 21. January 3. <Available at <<http://search.epnet.com/direct.asp?AN=2740732&db=bsh&>> (March 22, 2000).
- Emerson, D. 1999. E-trading picks up momentum. *CityBusiness: The Business Journal of the Twin Cities* 16(45): 16-17. April 2. <<http://twincities.bcentral.com/twincities/stories/1999/04/05/focus2.html>> (July 12, 2001).
- Greenwald, J., Cole, P.E., Hequet, M., Pascual, A.M., and van Voorst, B. 1998. Virtual brokers. *Time South Pacific* 20: 56-7. May 18. Available at <<http://search.epnet.com/direct.asp?AN=649583&db=f5h&>> (March 20, 2000).

- Jurek, K. 1999. Brokers living with e-trading explosion. *Crain's Cleveland Business* 20(20): 17-18. May 17. Available at <<http://search.epnet.com/direct.asp?AN=1886229&db=f5h&>> (March 20, 2000).
- MQMethod 2.06 for the Macintosh. <<http://www.rz.unibw-muenchen.de/~p41bsmk/qmethod/>>.
- New York Stock Exchange (NYSE). 2000. *Shareownership 2000: Based on the 1998 survey of consumer finances*. New York. <<http://www.nyse.com/pdfs/shareho.pdf>> (January 15, 2001).
- Norusis, M.J. 1988. *SPSS-X™ Advanced Statistics Guide*. 2d ed. Chicago: SPSS Inc.
- Online Investing. 1999. *Web Observer* February. <<http://www.webobserver.com/Columbus/July99/page13.html>> (April 2, 2000).
- Palmer, J., Bailey, J., and Faraj, S. 2000. The role of intermediaries in the development of trust on the WWW: The use and prominence of trusted third parties and privacy statements. *Journal of Computer-Mediated Commerce* 5(3). <<http://www.ascusc.org/jcmc/vol5/issue3/palmer.htm>> (April 5, 2000).
- Ray, T. 2000. *e-Trading: Researching and trading stocks, bonds, and mutual funds online*. Indianapolis: Sams.
- Rogers, E. 1995. *Diffusion of Innovations*. 4th ed. New York: The Free Press.
- and Shoemaker, F.F. 1971. *Communication of Innovations: A cross-cultural approach*. 2d ed. New York: The Free Press.
- Sarkar, M.B., Butler, B., and Steinfield, C. 1996. Intermediaries and cybermediaries: A continuing role for mediating players in the electronic marketplace. *Journal of Computer-Mediated Commerce* 1(3). <<http://www.ascusc.org/jcmc/vol1/issue3/sarkar.html>> (April 5, 2000).
- Sindell, K. 1999. *Investing online for dummies*. 2d ed. New York: IDG Books Worldwide.
- A steel vault. A moat. Fort Knox. We've got something a little better*. <http://www.etrade.com/cgi-bin/gx.cgi/applogic+About?gxml=hpc_disc_secure_c.html&lvl=about&traxui=HP_V_GM1> (July 11, 2001).
- Stephenson, W. 1967. *The play theory of mass communication*. Chicago: University of Chicago Press.
- Turner, T. 2000. *A beginner's guide to day trading online*. Holbrook, Mass: Adams Media Corporation.
- Walsh, S.T. and White, C.G. 2000. Congress's goal of increasing electronic filing: An assessment based on the technology-adoption literature. *Accounting Horizons* 14(4): 403-25. <<http://search.epnet.com/direct.asp?AN=3872960&db=f5h&>> (July 11, 2001).
- Williams, H., Whalley, J., and Li, F. 2000. Interoperability and electronic commerce: A new policy framework for evaluating strategic options. *Journal of Computer-Mediated Commerce* 5(3). <<http://www.ascusc.org/jcmc/vol5/issue3/williams.htm>> (April 5, 2000).
- Yankelovich Partners. 2000. *Annual SIA investor survey: Investors' attitudes toward the securities industry 2000*, October. The Securities Industry Association. <<http://www.sia.com/press/pdf/IS2000.pdf>> (January 15, 2001).

Appendix

Rotated Factor Matrix for Three Factor Solution

ID	Sex	Occupation	Age	Initial Stock Purch.	Trading Freq.	Amt. Owned	Factor Loadings		
							1	2	3
5	m	bus admin student	21	1999	mutual funds	little	0.65*	0.31	-0.01
7	m	retired music prof	78	1982	2-3/yr	little	0.51*	0.01	-0.18
15	f	accounting prof	43	1987	rarely	mod.	0.67*	0.24	-0.23
16	m	business owner	62	1978	10-12/yr	lot	0.66*	0.04	-0.26
17	f	info systems prof	37	2000	Once	little	0.69*	-0.09	0.02
18	f	retiree	44	1984	money mgr 1-2/yr	lot	0.69*	-0.11	-0.10
20	m	enr. mgr	31	1997	each month	mod.	0.57*	0.26	-0.01
22	m	finance mgr	36	1998	1-2/yr	mod.	0.67*	0.17	0.18
24	m	estimator/op. mgr	26	1980s	1-2/yr	mod.	0.78*	-0.20	-0.11
1	m	bus student	21	1995		little	0.11	0.64*	0.20
2	m	bus adm student	21	2000			0.08	0.54*	-0.48
3	f	econ. student	22	1999			-0.06	0.64*	0.09
4	m	econ/bus/finc student	22	1999			-0.03	0.61*	0.00
6	m	retired businessman	70	1950	10/yr	lot	-0.06	0.80*	-0.08
9	m	consult & communications	46	1996	several/yr	mod.	0.28	0.56*	-0.19
10	f	housewife	40	1984	once/yr	little	0.35	0.44*	-0.23
11	f	clerk	36	1989	not often	little	0.13	0.64*	0.39
14	m	CPA	42	1974	6/yr	lot	0.01	0.44*	0.02
19	m	mgr	35	1996	rarely	little	0.12	0.67*	0.50
23	m	prop. rcds examiner	37	Never		no	0.08	0.45*	0.02
12	m	financial advisor	31	1990	daily	mod.	0.28	0.08	-0.75*
13	m	stock trading	46	1990	daily	lot	0.05	0.31	0.73*
21	m	engineer/mgr	32	1995	rarely	little	0.34	0.36	0.53*
25	m	finance mgr	30	1989	40/yr	mod.	-0.29	0.17	0.67*
26	f	CPA	40	1990	up to broker	mod.	0.39	0.20	-0.61*
8	f	librarian	42	Never		no	0.46§	0.18	-0.48§
% of explained variance							19%	17%	13%

Note: * Indicates a defining variate; § indicates mixed loader.

Q Statements and Rank Scores

No.	Statement	Factor		
		1	2	3
1	I check stock prices two, three, or more times a day, hoping to capture gains from the market's ups and downs.	-4	-3	3
2	Because I am interested in long-term investing, I just trade a few times a year.	3	-2	-3
3	I am not buying stock of a company because it has a good product or good management! I'm here trying to be the first in when I think its stock price is going up right now!	-3	-4	1
4	The essence of a company's identity has to do with what it makes, whom it employs, how it is managed, where it is based.	-2	4	0
5	If I took bad advice, I hold myself responsible for having taken it, and I would not blame the person who gave it to me.	-2	4	-1
6	Considering the number of people who are trading online and the amount of money they are placing at risk, some level of pre-trade training or a warning on cyber-investing does seem advisable.	4	2	0
7	Like life itself, if you've got the capacity to learn and to be prudent, it ought to be fun to explore and see what comes out of stock trading.	1	3	0
8	The online trading is so close to gambling that traders can easily slip over the line into the pathology of addiction.	1	0	0
9	The Internet is very much an empowerment for the consumer and gives the consumer the ability to shop and purchase stocks on his or her own.	2	3	1
10	Online stock trading holds out the illusory promise that glamour and wealth are just a few keystrokes, maybe a mere mouse click, away.	3	0	-1
11	I feel confident in my judgment and research capability.	-4	3	1
12	The broker could prevent investors from doing something foolish.	1	-1	0
13	I feel any person should be able to research enough information to choose well-performing stocks. This is especially true with the ever-growing use of the Internet.	-3	4	2
14	Finding information is easy — it's filtering it that's hard. There is a lot of garbage and hype.	4	3	-2

No.	Statement	Factor		
		1	2	3
15	Nowadays, I can do my own research so I don't feel it is necessary to pay someone a lot of money for what I can do myself.	-3	2	4
16	I can probably make more money by focusing on my business than spending time researching stocks.	2	-2	-4
17	Now, not only can real-time quotes be found on web sites, but they may even be free. Sophisticated charting, research, and stock-screening tools abound. And the price of access to all of this information is getting lower and lower.	2	2	3
18	Spending time researching stocks or staying up on the market is quality time not spent with family, friends, or doing things that I would enjoy.	-1	-4	0
19	Brokers are so nice, but boy, they are robbing me.	-3	-3	2
20	Cyberbrokers don't always get customers as good a price as full service brokers, because the online brokers may have contracted to steer customer trades toward a specified market maker willing to pay a few pennies per share traded.	-1	-2	-1
21	The broker's advice is not given with your best interest in mind.	-1	-2	4
22	Online brokers often encourage investors to trade speculatively. Some of their advertisements reinforce cognitive biases, such as overconfidence.	0	1	-3
23	The main purpose is to purchase the stock. I do not care who does this as long as it gets done. Purchasing stocks online saves me money on commissions.	-2	-1	4
24	I like to use my broker when discussing best retirement and tax options for investing.	-1	-1	-4
25	I do most of my own analysis. I don't need the "hand-holding" that a full service broker provides.	-4	2	3
26	It is good to do it face to face when trading stocks. I can trust the transaction when I can look at a broker and see his or her character.	-2	-3	-3
27	It is faster to simply point and click, rather than to wait to speak with a broker for stock trading.	1	1	3
28	I'm not confident in my online skills. I'd hate to punch in "100" meaning 100 shares, and later find (in the fine print) that the unit of purchase is 100 shares, ending up with 10,000 shares.	0	-4	-1
29	Using a computer, I can execute my own trades at any place I feel comfortable.	2	1	2

No.	Statement	Factor		
		1	2	3
30	If you choose to go online, sign up with two online firms so you'll have a route to the market if one crashes. Online firms may offer telephone order backup, but they're not staffed for a rush — unlike the full service firms where legions of brokers await your call.	-2	0	-2
31	Full service brokers may not be available all the time, especially after market hours.	2	2	1
32	I'm reluctant to give out \$ info, credit card #s, etc. over the Internet.	0	0	-2
33	I believe a large investment would warrant professional advice or full commissions, while small sums of money would not.	0	-1	-2
34	For some larger investments, I would feel more confident after talking to a stockbroker who has more knowledge than I do.	4	1	-3
35	If I need help with assessing my own financial needs and picking my own investments, I would go to a neutral advisor, like a fee-based financial planner, who is paid for recommendations, not for stock trading.	3	0	2
36	The Internet just can't replace a flesh-and-blood broker's counsel. Investors would like to have ongoing advice and service.	0	-3	-4
37	Full-service brokerage firms risk being caught unprepared for the needs of the wave of younger people who have adopted the Net rapidly.	-1	0	2
38	What is important is not that a broker is going to pick winners 100% of the time but at least the broker can guide or mentor investors until they learn enough to know what to look for and what not to look for in a stock.	0	1	-2
39	I do not feel completely comfortable with my own abilities and would like to learn and observe the processes through someone like a broker with knowledge and experience. However, as I become more knowledgeable, I most likely would look into trading online.	3	-2	-1
40	Full service brokers should overhaul their culture so that brokers act more like financial advisers — sometimes serving as a sounding board for customers' own ideas — than as pure stock pickers.	1	-1	1