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Factors influencing customers' use of electronic commerce in stock trading : An empirical study in Korea

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Abstract

In recognizing the power of electronic commerce in continuously provided service context, this paper examines personal and situational factors as well as transactional characteristics influencing customers' use of electronic commerce in stock trading. Empirical data were collected from an intercept field survey of individual customers of two major Korean stock trading brokers. Our results show that customer knowledge, price sensitivity, access capacity, and frequency of order are crucial conditions for customers' use of electronic commerce in stock trading. Moreover, customer knowledge and price sensitivity appear to predict use of electronic commerce in stock trading most significantly, controlling some demographic variables. Despite several limitations, including cross-sectional design conducted only in Korea, this study advances the understanding of factors encouraging increased use of electronic commerce in continuously provided service context.

Key words: Use of electronic commerce, stock trading, personal factors, situational factors, transactional characteristics

1. Introduction

Recently, use of electronic commerce as a means of enacting transactions and relationships with customers is increasing exponentially (Hoffman & Novak, 2000; Davis et al., 1999). Since inherent opportunities of electronic commerce for conducting business online are driving the development of a new customer relationship paradigm, development of new products and pursuit of low cost 'self-service' strategies (Costello & Tuchen, 1998; Dunn & Varano, 1999), most organizations, large and small, are making major electronic commerce-related investments (Berthon et al., 1999).

In particular, the development of the Internet has made it possible for service providers to deliver service directly through the Internet with little or no human intervention (Voss, 2000). Thanks largely to the Internet a lot of service companies employ the new electronic channels (Ghosh, 1998; Prahalad & Ramaswamy, 2000). The Internet offers a primary communications channel with customers (Hoffman et al., 1996; Peterson et al., 1997; Evan & Wurster, 1999), a whole new way to establish rapport or direct link with customers (Sterne, 1996; Chou & Chou, 2000), and benefits that can help customers be more efficient and effective in their interactions with companies (McGaughey & Mason, 1998). The Internet has made it possible for companies to focus on building relationships with individual customers and to make direct, intimate and personalized contact with each customer (Dutta & Segev, 1999; Prahalad & Krishnan, 1999; Walsh & Godfrey, 2000). The World Wide Web (WWW) provides companies with a powerful means to interact with its customers on one-to-one basis (Hoffman et al., 1996; Versen, 1998; Wells et al., 1999) and presents important business opportunities (Dunn & Varano, 1999). Thus many organizations are leveraging the

World Wide Web to create superior linkages with customers (Venkatraman & Henderson, 1998).

In recognizing the significance of electronic commerce, a lot of previous studies have concentrated mainly on the adoption of this new technological innovation in the context of business-to-business transactions or one-time business-to-consumer interactions. However, little academic research has investigated electronic commerce in the context of continuously provided service where the customer typically enters into a formal relationship with the service provider and, subsequently, consumes or uses the service (continuously or intermittently) for an extended time period. The goal of this paper is to examine explicitly several factors influencing the increased use of electronic commerce in Korean stock trading industry where the development of electronic stock trading has been faster-than-expected.

As a matter of fact, in spite of the short history of electronic stock trading in Korea, most local brokers offer electronic stock trading services as at August 2000. The electronic trading value of stocks surged to nearly 63.1% of total trading value in August 2000. Excluding foreign investors and institutional investors, the electronic trading value of stocks reached a high of 74.9% (KSDA, 2000). This is remarkable when compared to the US online brokerage penetration ratio of 35% for retail investors in June 2000 (Wall Street Journal, 2000).

2. Research Hypotheses and Rationale

Whereas breakthroughs in electronic commerce have led to wide acceptance by customers, customers differ in how and how often they use electronic commerce (Barczak et al., 1997). Why do customers differ in their usage of new information technologies such as electronic commerce? This problem has persisted in the information systems literature for several decades within various contexts and with diverse variables tailored to the specificity of information technologies (Agarwal & Prasad, 1998). As a matter of fact, most previous research had emphasized the use of individual difference variables as critical factors that influence user acceptance of new systems and, hence, the actual use of these systems.

First of all, personal innovativeness may be associated with customers' use of electronic commerce. Rogers (1995) defined innovativeness in terms of the degree to which a person is relatively earlier in adopting an innovation than other members of his or her social system. Parthasarathy and Bhattacharjee (1998) defined the notion of innovativeness as the degree to which an individual is receptive to new ideas and makes innovation decision independently of the communicated experience of others. In addition, Steenkamp, Hofstede and Wedel (1999) defined consumer innovativeness as the predisposition to buy new and different products and brands rather than remain with previous choices and consumption patterns. Considering these definitions, Lin and Jeffres (1998) developed the measure assessing innovativeness traits associated with new communication technologies and found that the intent to keep up with the technology was a strong predictor for interest in adoption and use of multimedia cable technology. Agarwal and Prasad (1998) also developed a specific scale assessing personal innovativeness in the domain of information technology (PIIT) and validated the construct in the context of the innovation represented by the World Wide Web (WWW). Therefore, we may expect that customers would be willing to use electronic commerce more when they have personal innovativeness relevant to information technology usage.

Second, according to Li, Kuo and Russell (1999), actual use of electronic commerce requires knowledge about the Internet or "Internet literacy." Konana et al. (2000) also argue that investors' knowledge of the stock market and trading as well as knowledge of the Internet is crucial in the online setting. Sharma and Bingi (2000) confirmed this argument by stating that online investors tend to make the decisions based on independent research rather

than relying on a broker's advice, whereas traditional investors are individuals who need constant advice and "hand holding." Therefore, we may expect that customers would use electronic commerce in stock trading more when they have enough knowledge of electronic channel, stock market and stock transaction itself.

Buzzell and Ortmeyer (1995) acknowledged that just-in-time communication technologies help lower costs and improve service to the customer. Tax and Brown (1998) also found that deploying technology has lowered the cost of complaining and enhanced customer perceptions of a firm's responsiveness. Based on transaction cost theories, Bakos (1998) argues that Internet-based electronic marketplaces leverage information technology to match buyers and sellers with increased effectiveness and lower transaction costs, leading to more efficient, friction-free markets. The virtual value chain theory also suggests that electronic commerce reduce transaction costs and lowers product pricing (Benjamin & Wigand, 1995). These developments are commonly attributed to the efficiency of friction-free electronic markets that lower transaction and information processing costs by reducing human intermediation (Konana et al., 2000). In fact, electronic stock trading has dramatically reduced the direct transaction costs including brokerage commission. For example, unlike the U.S. system in which the brokers charge a fixed amount per trade, the stock brokerage commission is determined in proportion to the transaction amount in Korea. Moreover, as expected, the commission rate for electronic trading is only one-third or one-fourth of the commission rate for offline trading. Thus we expect that service price-sensitive customers are likely to use electronic commerce in stock trading in order to enjoy the lower commission.

In the meantime, actual behavior of a person may be dependent on the interaction that occurs between that person and his/her situational environment. Previous research has demonstrated that the situational variables such as time pressure may influence a consumer's conduct and attitude. Linneman et al. (1995) studied the effect of time pressure on the use of home shopping and concluded that significant and growing numbers of time pressured consumers were prepared to do their food shopping from home. Barczak et al. (1997) also found that individuals might use online grocery shopping because of lacking time to visit the store. According to Kenhove and Wulf (2000), many consumers are becoming more concerned about the efficiency of their shopping patterns because of time pressure, and efficiency can refer to the use of home shopping. Therefore, we may expect that customers would use electronic commerce more when they perceive time pressure or have little discretionary time.

In addition to time pressure, social pressure may influence individual behavior. In a study of microcomputer usage, Igarria (1993) argued that social norms had a significant effect on the extent of technology usage. Rogers (1995) also suggests that an important motivation for any individual to adopt an innovation is the desire to gain social status. Individuals may use new information technologies for obtaining a higher social status or a more important position in their society. In their cross-cultural study on cellular phone usage, Kwon and Chidambaram (1998) found that users were motivated to use information technology more from social pressure including peer pressure and concern for social status and current trends. Thus we may expect that customers would use electronic commerce more when they are under greater social pressure.

The capacity or speed to access to electronic channels including the Internet may be another situational condition for influencing use of electronic commerce. Hoag (1996) studied the relationship between access capacity and media use and indicated that users with high-speed access are more likely to spend time online, use more parts of the Internet, and tend to be more frequent users of data-intense applications. In support of her study, Emmanouilides and Hammond (2000) found that those users with a high data transfer speed were more likely to be active users of the Internet. Therefore, we may expect that customers

would use electronic commerce in stock trading more when they have high-speed access to the electronic networks.

Finally, besides personal and situational conditions, transaction characteristics such as transaction frequency and volume may be associated with customers' use of electronic commerce in stock trading. When customers are involved in many transactions frequently and they have a sufficient volume of transactions, electronic commerce would be more effective and convenient way for them to handle those transactions.

Hypotheses 1-8: In summary, we expect that customers would use electronic commerce more in stock trading, when they

- 1) have greater personal innovativeness in the domain of information technology*
- 2) have greater knowledge of electronic channel and stock market*
- 3) are concerned about price for stock trading service*
- 4) are under greater time pressure*
- 5) are under greater social pressure*
- 6) have higher access capacity*
- 7) place more orders in a week*
- 8) have greater value of investment in stocks*

According to Kenhove and Wulf (2000), the motivations, intentions, and actual behavior of a person are dependent on the interaction that occurs between that person and his/her situational environments. Considering this possible interaction, it is expected that key situational factors such as time pressure and social pressure not only have a direct effect on use of electronic commerce in stock trading but also moderate the effect of personal factors on use of electronic commerce. Moreover, it is also expected that key situational factors moderate the effect of transaction characteristics on use of electronic commerce. Thus we assume the effects of the interactions between personal factors and situational factors as well as between transaction characteristics and situational factors on use of electronic commerce in stock trading.

Hypothesis 9: The higher the level of time pressure, the stronger the positive association between

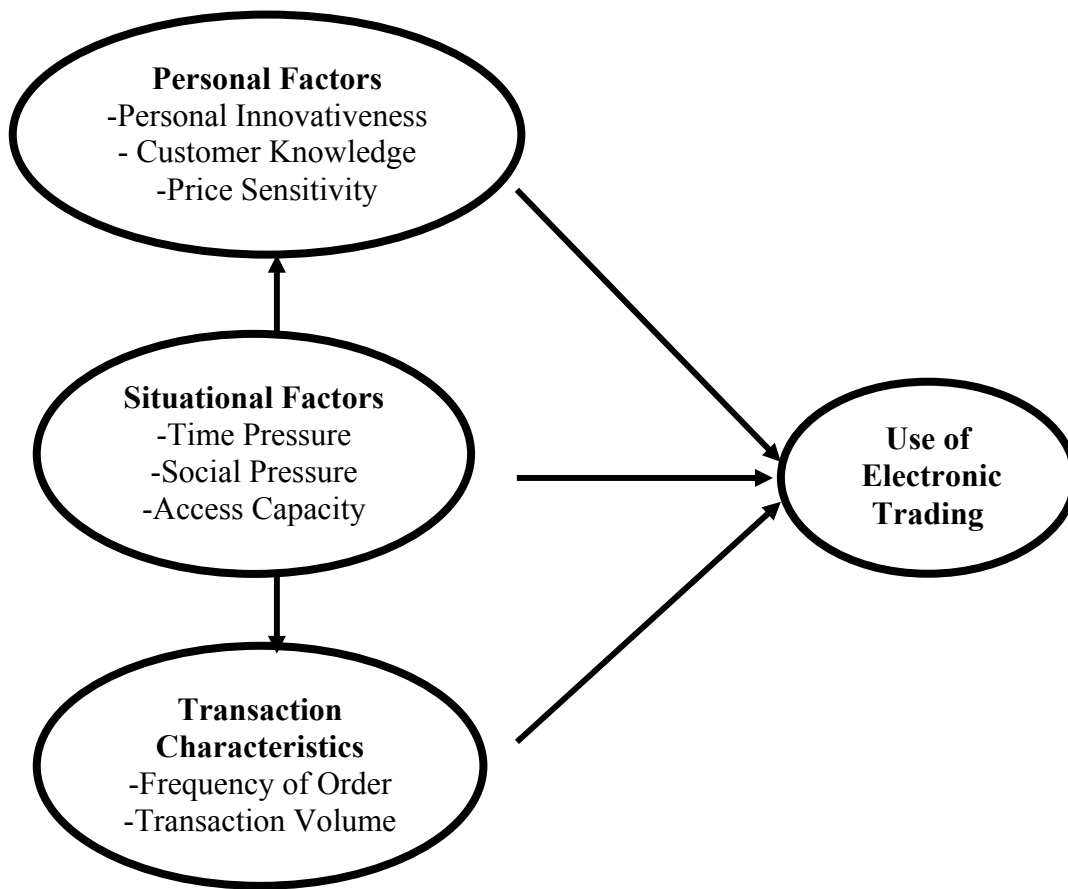
- a) personal innovativeness and use of electronic commerce in stock trading*
- b) customer knowledge and use of electronic commerce in stock trading*
- c) price sensitivity and use of electronic commerce in stock trading*
- d) frequency of order and use of electronic commerce in stock trading*
- e) transaction volume and use of electronic commerce in stock trading*

Hypothesis 10: The higher the level of social pressure, the stronger the positive association between

- a) personal innovativeness and use of electronic commerce in stock trading*
- b) customer knowledge and use of electronic commerce in stock trading*
- c) price sensitivity and use of electronic commerce in stock trading*
- d) frequency of order and use of electronic commerce in stock trading*
- e) transaction volume and use of electronic commerce in stock trading*

The proposed model for this paper is presented in Figure 1.

Figure 1 The Proposed Model for the Study



3. Methods

3.1. Operational measures

Measurement of most constructed variables in this study was executed by having respondents evaluate numerically a series of survey questions intended for the construction of Likert-type response scales. A five-point scale from strongly disagree (1) to strongly agree (5) indicates different levels of agreement with a question or statement. The validity of individual items was first examined using principal components factor analyses (See Table 1) . Items that loaded as expected were included in creating multi-items indices. According to the method of average ratings, scores on items written to measure the same construct are summed and then averaged to create composite measures. All multi-item composite measures were subjected to reliability analyses. Single-item measures were used when there was sufficient theoretical justification for including a construct.

Personal innovativeness: This was defined in the domain of information technology as the willingness of an individual to try out any new information technology. We used the construct developed and validated by Agarwal and Prasad (1998). This two-item index assessed personality traits relevant to customers' use of electronic trading.

Customer knowledge: This two-item construct was operationalized as the respondents' knowledge about stock trading and electronic channels used for electronic stock trading.

Table 1 – Indices Resulting from Factor Analysis

Factor (variance explained)	Factor Loadings	Cronbach's Alpha (α)
<i>Personal Innovativeness</i> (84.5%)		
If I heard a new information technology, I would look for ways to experiment with it	.91	.78
Among my peers, I am usually the first to try out new information technologies	.91	
<i>Customer Knowledge</i> (79.2%)		
To what extent do you know about stock trading	.89	.73
To what extent do you know about electronic channels including the Internet	.89	
<i>Price Sensitivity</i> (79.5%)		
I use electronic trading to take advantage of low prices	.89	.74
I am very concerned about low prices	.89	
<i>Use of Electronic Trading</i> (97.0%)		
The percentage of your total number of orders made through electronic trading during last six months	.99	.97
The percentage of your total \$value of orders was made through electronic trading during last six months	.99	

Price sensitivity: Price sensitivity is a two-item construct measuring the extent to which the respondents were concerned about low prices for stock trading services. This measure was drawn from previous work (Degeratu et al., 2000).

Time pressure: This is the respondent's judgment of the extent to which stock trading was subject to time availability. We used only an item, which is one of the multi-item indices developed by Kraut and his colleagues (1999) and Kenhove and Wulf (2000), because their items cross-loaded and did not exhibit validity in this study.

Social pressure: This measure is the respondent's judgment of the extent to which the respondent used electronic trading because of motivation from his or her peers' use. Since multiple items cross-loaded and did not exhibit validity and reliability, we used a single item measure developed by Kwon and Chidambaram (1998).

Access capacity: This five-point item was framed as statement about respondent's primary access capacity for electronic commerce in stock trading including: 1) 9600 bps or less; 2) 14400 bps; 3) 28800 – 33600 bps; 4) 56000 bps; 5) high speed (cable modem, ADSL or LAN).

Frequency of order: This five-point single item was framed as statement about how many orders the respondent makes in a week through his/her broker.

Transaction volume: This five-point single item was framed as statement about the total value of the respondent's current investments in stocks.

Use of Electronic Trading: In order to measure actual use of electronic commerce in stock trading, the survey asked about the extent or degree to which stock transactions was made through electronic trading during last six months. This is a composite index with two items, including: 1) portion of total number of orders that was made through electronic trading during last six months; and 2) portion of total \$value of orders that was made through electronic trading during last six months. The portion was estimated by the percentage, which was stated on a five-point scale ranging from 1 to 5: 1) 1% to 20%; 2) 21% to 40%; 3) 41% to 60%; 4) 61% to 80%; and 5) 81% to 100%. It was because raw percentages needed to be

collapsed into more managerial and interpretable number of scale categories. In addition, 0 was assigned to the cases that never used electronic trading.

Control Variables: It was noted that conclusions regarding differences in use of electronic trading should not be confounded by differences in demographic variables. Thus we included some demographic variables in our analyses to hold the respondents' demographic differences constant. A dummy variable was used to represent each of the two genders. Female was coded as 0 and 1 was assigned to male. The other demographic variables were categorized on a five-point scale because these variables normally spread out in large ranges.

3.2 Sampling and data collection

The individual customers (retail investors) of two major Korean stock trading brokers, that sponsored this empirical study, were selected for the sample population for this study. However, it was impossible to get a complete list of customers from these firms because of the strict regulation and concerns on privacy issues. Since the sampling frame for telephone or mail survey was not available, a field survey at the branches was selected for the alternative way of collecting empirical data for hypotheses testing. This method is often used and justified in marketing research, in particular in service marketing studies (Gwinner et al., 1998; Ruyter et al., 1998; Pritchard et al., 1999). In spite of the possibility of missing the investors conducting electronic trading from their office or home, we assumed that significant portion of them use the cyber branches near their office or home during lunch or other break time. It is because that they may not be allowed to do electronic trading at work or they may prefer high-speed access to the Internet and better IT (information technology) environment available at the cyber branches to plain dial-up connection at home. In addition, even the investors conducting electronic trading from their office or home need to be supplemented by some periodic or irregular visits to offline branches, where they can monitor real market atmosphere, discuss investment strategy with other investors or catch up informal information.

Sampling of branches for the field survey was conducted based on the type (traditional physical branch versus cyber branch) and geographical dispersion to avoid local bias and to better represent the population. A total of 10 branches including 4 cyber branches were selected for a field survey.

The field survey took place during two weeks of mid September 2000. Considering our observation and the suggestions of branch managers, the time zone around the lunch hour (between 11:00 a.m. to 2:00 p.m.) was selected as a convenient time to intercept the investors. It was because that most investors were busy around the market opening or closing time and many employed investors or homemakers seemed to visit the brokers' branches near their office or home during lunch break. Under the help and cooperation of branch managers, respondents were intercepted randomly at the selected branches. Of 220 contacted respondents, 33 refused to participate and 17 respondents did not finish the survey. One of the provided reasons for refusal to participate was their unhappiness with the portfolio performance. The main reason for incompleteness was their tight schedule. Upon termination of data collection, a total of 170 retail investors were surveyed successfully, representing a response rate of 77%.

Regarding sample characteristics, about half of respondents were in the age between 30 and 39 and more than 80% of respondents were male investors. In addition, about 60% of them turned out to graduate four-year college and have full-time jobs. This is consistent with the common sense that typical individual investors in Korea are normally male investors who are in the age of 30's, hold bachelor's degree, and are fully employed.

4. Empirical Results

To check the problem of collinearity among the various predictors, the Pearson correlations were examined (Thong, 1999). It was because high intercorrelations or redundancies among the independent variables might introduce unwanted multicollinearity in the regression models (Louadi, 1998). There is no evidence of significant possibility that collinearity among the predicting variables might be a problem (see Table 2). However, to address the possible multicollinearity problem, we followed Cronbach's (1987) and Lance's (1988) suggestions to center the component variables prior to forming the interaction terms. Centering method is a procedure whereby the mean of each independent variable is subtracted from its score (Louadi, 1998). This method provides a means of controlling for collinearity and avoids confounding the main effects in moderated regressions (Speed & Thompson, 2000).

Table 2 – Pearson Correlations among Variables

	PI	CK	PS	TP	SP	AC	OF	TV	UE
PI	1.0								
CK	.34**	1.0							
PS	.12	.16*	1.0						
TP	.21**	.25**	.22**	1.0					
SP	.13	.15	.14	.12	1.0				
AC	.16*	.27**	.13	-.01	.23**	1.0			
OF	-.04	.24**	.14	.39**	-.05	-.07	1.0		
TV	-.15	-.21**	-.12	-.06	-.07	-.21**	.06	1.0	
UE	.22**	.45**	.40**	.24**	.23**	.34**	.22**	-.33**	1.00

** Correlation is significant at the .01 level ($p < .01$).

* Correlation is significant at the .05 level ($p < .05$).

(PI: Personal Innovativeness, CK: Customer Knowledge, PS: Price Sensitivity, TP: Time Pressure, SP: Social Pressure, AC: Access Capacity, FO: Order Frequency, TV: Transaction Volume, UE = Use of Electronic Trading)

Separate two-step, hierarchical regression analysis was performed to test hypotheses predicting use of electronic trading. At step 1, we entered three demographic variables, including age, gender and income, as control variables. In addition, eight predictors were entered. At step 2, ten interaction terms of personal factors and situational factors were entered all in once into the model.

As shown, Table 3 represents the regression results of the models with use of electronic trading as the dependent variable. The result of the reduced regression model generally turned out as hypothesized. The percentage of variance explained (*R-square*) was 50%, implying a statistically significant ($p < .001$) and satisfactory model. The *F*-statistics is also statistically significant.

Two control variables, gender ($\beta = .16$, $p < .05$) and income ($\beta = -.26$, $p < .001$) were significantly related to use of electronic trading. The effect of the control variables was almost unchanged when the interactions were entered in the regression model.

In the model, the predictors such as customer knowledge, price sensitivity, access capacity and frequency of order appeared to be significant in terms of both the signs and the significance of the beta weights when determining use of electronic trading. Thus hypotheses H2, H3, H6, and H7 were supported. First, as for the situational factors, one of them was found statistically significant predictor, namely access capacity ($\beta = .13$, $p < .05$). Two personal factors including customer knowledge ($\beta = .27$, $p < .001$) and price sensitivity ($\beta = .23$, $p < .001$) were also found statistically very significant. In addition, one of two

transaction characteristics, frequency of order ($\beta = .14$, $p < .05$) appeared to be significant at the alpha level of .05. The result showed that customer knowledge and price sensitivity are the most significant predictors.

When we included 10 interaction terms altogether, the increase in *R-square* was only .03, which was not significant. This means that the introduction of the interaction terms in regression did not add significantly to the variance explained.

Only the interaction effect between time pressure and frequency of order were significant but showed negative coefficient. The other interactions were found not to be significant. Thus hypotheses H9 and H10 predicting the interaction relationship between personal factors and situational factors on use of electronic trading totally were rejected.

Table 3 – Predicting Use of Electronic Trading

Variables	Reduced Model		Complete Model	
	Standardized Beta (β)	Probability Level	Standardized Beta (β)	Probability Level
Control Variables				
Age	-.09	.20	-.10	.16
Gender	.16	.01*	.16	.02 *
Income	-.26	.00***	-.28	.00 ***
Personal factors				
Personal Innovativeness (PI)	.06	.33	.05	.43
Customer Knowledge (CK)	.27	.00***	.26	.00 ***
Price Sensitivity (PS)	.23	.00***	.23	.00 ***
Situational factors				
Time Pressure (TP)	.04	.59	.04	.54
Social Pressure (SP)	.08	.21	.11	.11
Access Capacity (AC)	.13	.04*	.13	.05†
Transaction characteristics				
Frequency of Order (FO)	.14	.03*	.17	.01 *
Transaction Volume (TV)	-.04	.55	-.04	.55
Interactions				
TP x PI			-.04	.60
TP x CK			-.06	.33
TP x PS			.00	.97
TP x FO			-.12	.06†
TP x TV			.05	.46
SP x PI			-.04	.59
SP x CK			-.03	.70
SP x PS			.00	.99
SP x FO			-.06	.39
SP x TV			.01	.92
Multiple R	.71		.73	
R-square	.50		.53	
Adjusted R-square	.47		.47	
F	14.43***		8.02***	
Δ R-square			.03	
Δ F			.99	

†: $p < .10$, *: $p < .05$, **: $p < .01$, ***: $p < .001$

5. Discussions

The first part of empirical results of this paper has confirmed previous research contentions that use of electronic commerce in stock trading is a function of several conditions such as personal factors, situational factors and transaction characteristics.

First of all, inconsistent with prior research, personal innovativeness didn't predict use of electronic commerce in stock trading. This finding confirms that electronic stock trading has already entered into the matured adoption stage in Korea. Personal innovativeness might be a strong predictor for any new innovation in early stage of adoption and use.

Second, this study found that investors' knowledge of the stock market, of trading, and of electronic channels is crucial for use of electronic commerce in stock trading. This result confirms previous literature on customer knowledge as a predictor of customers' usage of new information technologies (Li et al., 1999; Konana et al, 2000; Sharma & Bingi, 2000). If customers lack knowledge about stock market and stock trading, they would prefer indirect investment such as mutual fund to direct investment based on their own decision-making. Also, they would like to depend on the recommendation or advice of broker's fund manager. Thus there is less motivation to use electronic stock trading in this case. Furthermore, knowledge about electronic channels including the Internet, computer and other devices are essential for use of electronic commerce in stock trading. Here, the importance of customer education comes out. In order to make computer or Internet illiterate people be electronic traders, the brokers may need to focus on extensive customer education or training programs, in particular through their cyber branches. Otherwise non-electronic investors will be behind the trend of electronic commerce and experience so-called digital gap in their economic activities.

As expected by the media reports of increasing volumes of electronic commerce, our results suggest that price-sensitive customers are more likely to use electronic commerce for stock transaction. In fact, price sensitivity appeared to be most significant predictor. The most plausible interpretation of this finding is that investors generally use electronic stock trading in order to save the commissions for stock trading in Korea. Thus it can be argued that considerable price difference between online and offline can be a strong driver of customers' use of electronic commerce.

Contrary to expectation, the direct effect of time pressure on use of electronic commerce in stock trading was not supported. This result might come from the characteristics of Seoul area, where the survey was conducted. Unlike small cities or rural areas, the physical branches of stock brokerage firms are almost ubiquitous in Seoul area. People can easily visit the branches, in particular during lunch break. In addition, since most people are users of the wireless telephone service, they can make a call whenever time matters. Thus this result may be changed if the study is replicated in a different setting.

Inconsistent with our hypothesis, our results show that social pressure is not an effective mechanism to influence use of electronic commerce in stock trading. It is because use of electronic trading is beyond the early stage of adoption and most people use it now. Thus social pressure as a predictor of use of electronic trading doesn't work well any more.

One important finding of the study concerns the capacity or speed to access to electronic channels. Our result confirmed the previous studies (Hoag, 1996; Emmanouilides & Hammond, 2000) by indicating that heavy users of electronic trading depend on high-speed access. This finding implies that high usage of electronic commerce is almost impossible without access to a good and fast infrastructure. Investors suffering from a special condition commonly referred to as speed poverty, may be eliminated substantially from the benefits of electronic commerce. Thus the issue of access to electronic channels has become the critical condition for using electronic commerce. Considering the problem of speed poverty or speed gap between information rich and information poor, the establishments of

cyber branches in Korea are regarded as very important strategic moves. Investment on cyber branches will make people access to high-speed information infrastructure in spite of their limited personal resources. In addition, the brokerage firms may need to make traditional physical branches be equipped with complementary cyber facilities. The other service providers moving toward electronic commerce should remember that access capacity available to their potential customers is a key condition for rapid adoption and extended usage of their planned electronic commerce system.

The results of the study provide empirical support for our expectation that electronic trading is more used by customers placing orders more frequently. It is because that electronic trading is more convenient and efficient as well as provides bigger savings in terms of transaction commissions. In addition, it is very hard for the customers placing orders less frequently to justify some personal investments regarding computer equipment or access to the Internet.

Inconsistent with our expectation, there is no evidence supporting that transaction volume in terms of money value can predict use of electronic trading.

The control variables of the study also show that demographic variables predict use of electronic trading according to common sense. Matching with our expectations, use of electronic trading is negatively associated with income. The possible explanation is that high-income people prefer more prestige service or a special treatment by a human contact. In addition, in Korea, male investors appeared to be dominant in using electronic trading.

6. Conclusions

This study contributes to the literature on electronic commerce by empirically examining the conditions for customers' use of electronic commerce in stock trading in the context of Korean stock trading industry, where electronic trading has already taken off.

With regard to the goal of this study, we found that customer knowledge, price sensitivity, access capacity, and frequency of order are crucial conditions for customers' use of electronic commerce in stock trading. In particular, customer knowledge and price sensitivity appeared to predict use of electronic commerce most significantly, controlling some demographic variables.

While it has successfully addressed the proposed hypotheses, as with most research efforts, this study is not without limitations. One limitation relates to the sampling procedure. This study adopted a customer intercept field survey at the selected branch offices because it was impossible to get a complete customer list for random sampling. Though the sample of this study may not represent the targeted population well, regulation on customer privacy information necessitated and justified the use of this method as an alternative way of sampling and data collection. Moreover, considering the relatively large number of research variables, the sample size of this study may be a little small and need to be increased.

The Korean context of this study places limitations on the generalizability of our findings to stock brokerage firms in other national cultures. Nonetheless, this investigation in a non-US scenario may shed useful light on the general conditions for customers' use of electronic commerce. It would be interesting and illuminating to compare this study with another study of an industry or country in which electronic commerce is less prevalent or in its infancy.

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