

# Assessment of Information Use via Internet

Joonho Do

Research Fellow

Korea Information Society Development Institute

## Abstract

The differences in demographic characteristics of receivers were considered main predictors for information use in the early stage of information inequity research literatures. This approach was based on the idea of cross-situational consistency and the “source-sending-messages-to-receivers” paradigm. There is, however, growing agreement that situationally-bound factors are better indicators for the prediction of information use. In this study both user-defined situationality and demographic characteristics are examined to assess information use via Internet.

This paper expects that user-defined information need is a better predictor than demographic factors for information use in the situation where a receiver initiates the communication process and a medium has an interactive communication function. This study also proposes that communication research for interactive media would be appropriately done with the “receivers-seeking-messages-from-source” paradigm. A survey was performed for university students to find the relative importance of demographic factors and situational factors in using Internet. The result generally supports that

situational factors play a more important role than demographic factors in retrieving information via Internet.

## Introduction

The information inequity phenomenon has been studied in the context of the mass communication process, and explained by the well known knowledge gap hypothesis formulated by Tichenor, Donohue and Olien(1970). The hypothesis implies that attempts to equalize the distribution of information within a social system which employs the mass media are bound not only to fail, but actually to increase the inequality. In the hypothesis, people with higher socio-economic status are presumed to have better access to the communication technology.

Thus they gain more knowledge at faster rate than people of low socio-economic status. So equal access to the technology is assumed to play an important role in receiving information. But equal access to the technology is only a necessary condition but not a sufficient condition for equal information use since other factors are associated with the actual information use. There is a large body of literature(Youn, 1998; Regan, 1993) indicating that situationally-bounded factors are more important than demographic factors in predicting information use. In the new media environment which tends to have characteristics of interactivity, information need perceived by receiver is expected to predict information use better than demographic factors.

This study analyzes information use via Internet with focus on the factors that produce unequal use among the users. This paper examines the relative importance of user-defined situationality and demographic factors in predicting information use under equal access to the new technology. Public policy for information use has important meaning in the modern society where information is considered a value added commodity(Salvaggio, 1985). If a public policy favors equal distribution of information to each member of society and narrowing of the knowledge gap among the members, identifying the factors that cause information inequity in a new media environment will be an important process.

It can be expected that government effort to secure equal access to the new technology alone will not solve the problem. The research regarding informa-

tion use associated with the new technology will be necessary to get a more clear answer to solve the information inequity problem.

## Previous Finding

The knowledge gap hypothesis which first appeared in mass communication literature in 1970 by Tichenor et al. has important implications for the use of the mass media as a constructive social tool. The original formulation of the knowledge gap hypothesis was supported by the reinterpretation of several studies conducted in the United States, including a news diffusion study showing that a news event diffused to high socio-economic persons faster than to lower socio-economic persons. Regarding inequity researches, Dervin(1980) noted that the literature which posits gaps and inequalities as existing is generated, almost without exception, within the frame of an explicit or implicit use of a traditional model of communication—a source is seen as having a message which he or she wishes to send to a set of receivers. The research then attempts to see whether the receivers got the message, which receivers didn't, which did, and how well. When researchers use the traditional framework of communication, most researchers agree that gaps do exist. The explanation for the gap is that some receivers are less able and less willing to take information than others.

In gap and inequity research, the standard has been implicitly assumed to be the message. It assumes that messages cause impacts, that they exist independent of sources or receivers, that messages have lives of their own. But Dervin pointed out that it is not so much the message that is seen as having a life of its own but the information it imparts. It is the concept of information that provides the standard against which observers can judge whether there are, in reality, communication gaps.

Dervin(1980) summarizes it as “absolute information”. What appears to have happened in the gap and equity literature is that researchers unknowingly accepted absolute information assumptions and imposed them on their

respondent. Ruben(1980) suggests other approaches to information as: (1) data, code, commodity, pattern, (2) a process by which data is acquired, transmitted, transformed, stored or retrieved, (3) a channel or technology through which data is transmitted, transformed, stored and retrieved, and (4) uses, functions or outcomes of data processing, organization, transmission, storage or retrieval.

Miller(1988) classified the concepts of information into two categories: (1) information as static structure and (2) “in-formation” as active process. The static structure aspect of the concept of information puts emphasis on storable, controllable manipulatable information as structural records. The in-formation aspect refers to the universal process which mediates the meaningful interaction of all kinds of structure, the process by which structural differences can make a meaningful or significant difference. Thus, the process of in-formation involves the activity of establishing meaning or significance. The focus of information use and knowledge gap research should move from the absolute information perspective to the active process of in-formation in new media environment which requires more active participation from the receiver. The inequity concept should put emphasis on the fact that the significance of the stored structure, or information depends upon its retrieval and revival and on how it figures into an active process of in-formation. In other words, the concept of information should change from observer constructions to user constructions. The implication of this reasoning is that human communication or the use of information can not be seen merely as a passive process where the receiver catches messages thrown out by sources. Rather information use is a creative process. In a broad perspective, the moves in attempts to predict information use have paralleled the ways in which information has been defined. Thus, with the concept of “in-formation”, individual information need would be a main predictor for information use.

## Situational Factor

In the early stage of gap research, researchers attempted to predict

information use on the basis of individual traits. Commonly, the trait approach was based on the idea of cross-situational consistency. This meant that traits such as demographics and personality were assumed to predict behavior regardless of time, space, or change. This approach, however, did not work out well. Many researchers tried to solve the problem.

There is growing agreement that a shift from cross-situational predictors to situationally-bound predictors should greatly improve the prediction of situation. As Grunig and Disbrow(1977) suggest, a cross situation approach may work in some of cases because individuals with common demographic characteristics and common personality traits often are found in similar situations. But such traits are too far removed from the actual situations in which information use occurs.

It was clear in the above literature review that the move away from cross-situational approaches and toward situationally-bound approaches came first as post hoc explanation of why expected results did not occur. Researchers were introducing variables such as “level of importance” and “degree of interest”. There are many studies showing significant relationships between interest or relevance and information seeking and use(Clarke and Kline, 1974 ; Donohue et al., 1975 ; Genova and Greenberg, 1979 ; Hanneman and Greenberg, 1973).

With this demand for a situational approach came a series of studies testing various situational measures against more traditional cross-situational demographic or personality measures. The studies proved that the situational predictors are more powerful than cross-situational predictors(Chaffee and McLeod, 1973). The results show that message discrimination(respondent recall of measures one is voluntarily exposed to) was a stronger predictor of information holding than education(Clarke and Kline, 1974); situational measures were more powerful predictors of information seeking than across time-space attitudinal measures(Stamm and Grunig, 1977).

What seemed more important to coherent development of a situational approach was full recognition of the need for user-constructed perceptions of situations and more fundamentally full recognition of and allegiance to the ideas of user-constructed information(Dervin, 1980). The concept of user

constructed information represents how a receiver perceives a specific situation. The perception determines how much information he or she needs to cope with the confronted situation to make a proper movement.

Since life is inherently unmanageable, available sense frequently runs out and the individual must ask questions and seek answers in order to design the next movement. This viewpoint provides a conceptual context within which to hypothesize when people will seek to inform themselves. It is the point of need for gap-bridging, when old sense has run out. The “gaps” exist between the pictures the receivers now have in their heads and the sense they require to design movements for their lives. In this context, it is assumed that communication occurs when receivers reach out to use input useful in their lives. If a person perceives that a specific situation is important, then he or she is more likely to seek pertinent information actively to reduce the uncertainty.

## Uses and gratification of Interactive media

Uses and gratification research has contributed substantially to understanding of the mass communication process. The concepts developed in uses and gratification research also have implications for the interactive media. In the uses and gratification model, as Swanson(1987) noted, people are described as motivated by psychological, social, and sociocultural influences to use mass media to accomplish particular ends, conceived as “gratifications”. Various aspects of a received message, such as attributes of medium, genre of media content, or specific message or program, may provide gratification (Cohen, Levy, and Golden, 1988; Cohen, 1987; Katz, Blumer, and Gurevitch, 1974). In the uses and gratification formulation, the seeking of gratifications is conceived to be a significant determinant of persons’ exposure to mass communication. In particular, uses and gratification research has identified a variety of motives that reflect the utility, selectivity, and intentionality of audience activity regarding media use(Frank and Greenberg, 1980; Greenberg,

1974; Levy and Windahl, 1984).

According to Rubin(1981, 1983, 1984) and Windahl(1981), there are two primary types of motives for television viewing: ritualized and instrumental. In identifying these two different types of motives, Rubin(1984) pointed out that ritualized viewing consists of more habitual use of television for diversionary reasons(e.g., companionship, time consumption, relaxation), and a greater affinity with the medium itself. On the other hand, instrumental viewing reflects a more goal-oriented use of television content to gratify informational needs or motives.

In two way interactive media, the particular gratifications experienced by receivers are not thought to be mainly controlled by the message, genre, or medium itself. Instead audience members exhibit some independence and diversity in linking gratifications to media messages as they creatively use interactive media to try to accomplish their desired ends. Messages for interactive media can be seen as more malleable and capable of being interpreted or taken in somewhat different ways by users who seek different gratifications from them. Thus, the instrumental motive is expected to play a more important role than the ritualized motive in using interactive media.

## Research Questions and Hypotheses

The following research questions are examined in this study.

- 1) What are the main motives for people to use Internet?
- 2) What is the relationship between perceived information need for subject categories and use of Internet?
- 3) What is the relationship between demographic factors and use of Internet?

The main motives for Internet use are examined by user-defined situationality. The main motives for Internet use are assessed by the following dimensions suggested by Dobos and Dimmick(1988); 1) surveillance, 2) knowledge, 3) relaxation, 4) excitement, and 5) interpersonal utility.

Considering the given logic for the movement toward reconceptualization



of information, this study expects that user-defined situationality will predict “in-formation use” via Internet better than demographic factors. In other words, users are supposed to retrieve various information creatively from a database via Internet rather than passively catching messages sent by a source.

In this situation, demographic factors will be considered variables which masks the relationship between user-defined situationality and information use. The higher socio-economic group is expected to use Internet more than the lower socio-economic group. But this does not mean that the demographic factors directly cause information use. It can be explained by associating the socio-economic status with information need. The higher socio-economic group people have better education than those of the lower socio-economic group. With better education high socio-economic group people are likely to have jobs that are more complex than those in lower socio-economic group. That means that higher socio-economic group people have a bigger and more complex picture in which they perceive their lives and environment. So they are more likely to be in the situation to find gaps in their pictures and need more information to fill the perceived gaps than lower socio-economic group people who are less likely to find gaps in their simply defined picture.

In this study, Internet is selected to test the hypothesis since it has interactive characteristics and is readily available. In using the medium, communication occurs when a user initiates the information seeking process. And to handle the unequal access problem of the new technology, all the sample group were selected from those who can access to the medium.

With this conceptual framework, the following hypotheses can be produced for the second and third research questions:

H1: Specific information need will play more important role than demographic factors in explaining the use of Internet.

H2: Within the same demographic level, the higher the information need, the more a receiver will use Internet.

Since the first research question, which examines the motives for using Internet, has an exploratory nature, no hypothesis is generated associated with the first research question.

## Method

Qualitative method and quantitative method were combined to examine the use of Internet. First, an in-depth interview had been conducted to find general perceptions of Internet use. Then, a survey method was used to analyze information use via Internet. A questionnaire assessing Internet use was completed by students who were enrolled in an introductory course for information society and mass media at a university in midwest region of United States. During the course, students are exposed to the use of Internet. Thus, every student in the class recognizes that he or she can get access to Internet either at several public computer labs on the campus or through personal computers.

The questionnaire includes items related to uses and gratification items. These items are designed for the first research question which examines the main motives for using Internet. Items are constructed based on two sources: one is previous uses and gratifications literature and the other is results of the in-depth interview that was conducted before the survey. During the interview, a couple of concerns regarding the use of Internet were pointed out by students.

While information related need accounts for a substantial amount of Internet use, need for interpersonal communication was considered an important factor in using Internet. Processing electronic mail messages and getting access to electronic bulletin boards was frequently mentioned as an important function of Internet. Another concern for Internet use was that people often navigate various sources in Internet for fulfilling curiosity or for fun. In this case, people use Internet for relaxation or excitement. In addition to these concerns are added those produced from existing uses and gratification literature: surveillance, knowledge, relaxation, excitement and interpersonal utility.

The following question precedes items asking the main motives for using Internet:

Which of the following would you say best describes the reasons you use Internet?

The response for each listed item was assessed using a four point Likert-type

scale ranging from 4 = strongly agree to 1 = strongly disagree. For these items, a principal axis factor analysis with varimax rotation was used to generate a set of factors that can explain the motives for use of Internet. Then, the factors were used as independent variables for multiple regression analyses of perceived benefits from use of Internet.

To assess perceived information need for subject category, the following question was asked:

How important is the following information to you?

The response for each listed items was assessed by using a four point Likert-type scale ranging from 4 = very important to 1 = very unimportant.

Demographic information in terms of age, sex, education level, and spendable income per month was gathered. These demographic factors as well as perceived information need for specific categories were included in a multiple regression in which frequency of Internet use is a dependent variable. By doing multiple regression which contains both perceived information need and demographic factors as independent variables, the relative importance of each variable in predicting information use via Internet was analyzed.

### **Statistical Analysis**

Factor analysis were performed to examine the main motives for using Internet. Then, factors generated by factor analysis with varimax rotation will be used as independent variables in two multiple regressions in which frequency of Internet use and satisfaction from Internet use are dependent variables respectively.

Then, another multiple regression method was used to analyze the relative importance of demographic factors and user perceived information need to predict information use via Internet. In this study information need perceived by users is expected to be a stronger predictor than demographic factor.

Then partial correlation analysis was done to find the relationship between total information need and frequency of Internet use when demographic variables are controlled. Demographic level is expected to have relationship with Internet use. But within the same demographic level, the correlation between user perceived information need and information use would be higher

than the original correlation. That means that the partial correlation coefficient between user perceived information need and information use with demographic level held constant will be higher than zero order correlation coefficient.

## Result

### Sample analysis

The survey yielded 259 completed cases. There are 116 females(44.8%) and 143 males(55.2%) in the sample. The sample includes an age group in which mean is 19.9 and mode is 19. In the sample, 163 people(63.9%) own a computer while 92 people don't. In terms of computer experience, 107 people(41.8%) have used a personal computer for more than 5 years. Regarding computer skills, 102 people (39.5%) stated that they have good computer skills. 96 people(37.2%) in the sample evaluated their computer skills as poor or fair, while 60 people(23.2%) in the sample evaluated their own computer skills as very good or excellent. For parents education level, 83 people(32.5%) replied that they have a father who has some college education, while 69 people(27.1%) said that their mother has graduated high school.

For the Internet use, 106 people(44.5%) replied that they are satisfied with Internet while 14 people said that they are dissatisfied or extremely dissatisfied with the Internet. In terms of frequency of Internet use, 46 people(19.2%) use Internet once a week, while 79 people(32.9%) said that they use Internet twice a week or more than twice a week. That means 52.1% of the sample use Internet once a week or more.

### Motives for Internet use

The first purpose of this study is to identify the main motives for people to use Internet. Factor analysis was performed to identify the factors. Factor analysis for main motives for using Internet shows that there are mainly four factors that can explain students' Internet use. Principal component analysis with varimax rotation was performed to generate main factors. Factors were

established in the way that an item is included in a factor if it has a loading of .6 or higher for one factor and differences between the factor and other factors are at least .25.

Four factors can be identified under the following categories: “excitement”, “information seeking”, “interpersonal utility”, and “communication”. Each factor has an eigenvalue bigger than 1.

These four factors combined explain 68.3% of variance in Internet use. The “excitement” motive consists of the following items: “Internet gives me relief from boredom”, “Using Internet is often dramatic”, “Using Internet is often exciting”, “Using Internet stirs me up”, “Internet helps me put my mind at ease”, “Internet gives me things to think about besides my own problems”. The “excitement” factor has an eigenvalue of 9.54 and explains 43.4% of variance. This factor shows that people use Internet to generate excitement or to get relief from boredom. In this case people use Internet for the purpose of having excitement or fun. The reliability analysis shows that the six items which constitute the “excitement” motive has a Cronbach’s Alpha of .873 which is considered a fairly consistent measure.

The second factor that explains using Internet is the “information seeking” motive. This factor is mainly related to information need for surveillance and important issues. The “information seeking” motive includes the following items in the survey: “I’d like to feel in touch with what’s happening in the United States”, “I’d like to feel in touch with what’s happening in Michigan”, “I’d like to feel in touch with Lansing area events”, “I’d like to feel in touch with international events”, and “I’d like to get detailed information on things that affect me”. The “information seeking” motive has an eigenvalue of 2.60 and explains 11.8% variance of Internet use. This factor shows that people use Internet to satisfy specific information needs. Reliability analysis indicates that items which construct “information seeking” motive has Cronbachs Alpha of .887.

The third factor that explains Internet use is “interpersonal utility”. This factor tells that people use Internet to gain things that influence other people. The following items revealed high loading for the “interpersonal utility” motive: “Internet gives me facts to back up my opinions”, “Internet gives me facts

and opinions I know will interest other people”, and “Internet gives me facts and opinions which help me influence other people”. This factor has an eigenvalue of 1.65 and explains 7.5% of variance. Items that constitute the “interpersonal utility” have a Cronbachs Alpha of .878.

“Communication” motive is the fourth factor in the analysis of Internet use. This factor indicates that people use Internet to communicate with each other. Two items showed high loading for the “communication” motive which are “Internet gives me a way to communicate with other people”. and “Internet gives me a way to express my opinion to others”. The “communication” factor has an eigenvalue of 1.23 and explains 5.6% of variance in Internet use. Reliability analysis for items that construct the “communication” motive show that the items have Cronbachs Alpha of .813.

### Multiple regression analysis with factors

Factors that were generated from the factor analysis were used in multiple regression analysis. A multiple regression was performed to analyze the relative importance of each factor in predicting the frequency of Internet use.

The examination of the scatterplot and residual plot of each independent variable by dependent variable did not show any strong evidence of non-linearity, heteroscedasticity and the existence of significant outliers. Table 3 shows the result of the analysis.

Table 1. Multiple Regression for frequency of Internet use

Independent Variable	Beta	T value
Communication	.39	6.62*
Excitement	.14	2.36*
Interpersonal utility	.02	.47
Information seeking	-.02	-.33

\*  $p < .05$

The multiple correlation coefficient (R) is .42 which is interpreted as the correlation between the independent variables together and the dependent

variable. The R square ( $R^2$ ) is .18, which means 18% of the whole variance in frequency of Internet use is explained by the independent variables included in the multiple regression equation.

In the multiple regression analysis, the Beta coefficient shows the relative importance of independent variables (the true relationship between independent variables and a dependent variable). What a Beta coefficient (standardized partial regression coefficient) means is the unique contribution of an independent variable to the variability of a dependent variable, or in other words, the correlation between an independent variable and a dependent variable when other variables are partialled out. The analysis shows that the communication motive is the strongest predictor, with Beta coefficient of .39 among the factors for frequency of Internet use. It means that people who use Internet in order to communicate with other people are likely to use Internet most frequently. The “excitement” motive has the second largest Beta coefficient of .14. This means that the “excitement” motive makes the second largest contribution in predicting frequency of Internet use by people. However, the “information seeking” motive does not show a significant contribution in predicting the frequency of Internet use with Beta coefficient of -.02.

### **Hypotheses testing**

This study predicts that user defined situational factors would play a more important role than demographic factors in predicting use of interactive media. The communication research paradigm for mass media is considered ‘source-sending-messages-to-receivers’. For two-way interactive media, the appropriate research paradigm would be ‘receivers-seeking-messages-from-source’. With the new research paradigm, the following hypotheses were produced.

H1: Specific information need will play more important role than demographic factors in explaining the use of Internet.

Multiple regression and Pearson’s product moment correlation were used to test this hypothesis. In the multiple regression equation, the dependent variable is frequency of Internet use for specific information while independent

variables include importance of specific information to user, other media use, demographic factors, and user's computer information. Other media use includes TV, radio, newspaper, and radio consumption. Demographic factors contains the following variables: gender, spendable income per month, grade, age, father's education level, and mother's education level. User's computer information includes computer ownership, computer skills, and computer experience.

Twelve separate multiple regression analysis were performed in order to determine the relationship among frequency of Internet use for specific information and independent variables. Twelve dependent variables are frequency of Internet use for retrieving following information or achieving a specific purpose: news about the United State, news about Michigan, news about the Lansing area, news about international issues, information related to the library, information related to study, information related to sports games, business information, entertainment(music, movies) information, computer information, doing communication(E-mail, BBS), and other information which a user specifies.

Both Beta coefficient in the multiple regression equation and correlation coefficient are considered to examine the relationship of frequency of Internet use for retrieving specific information and independent variables. In eight cases out of twelve multiple regression analysis, Beta coefficient and/or correlation coefficient for importance of specific information has positive relationship with frequency of Internet use for retrieving specific information. In six cases importance of specific information turns out to be the most important factor that can predict frequency of Internet use for retrieving specific information.

In analyzing the relationship between independent and dependent variables, both Beta coefficient and correlation coefficient are examined. If an independent variable has either Beta coefficient or correlation coefficient which is statistically significant at alpha level of .05, it is considered to have significant relationship with frequency of Internet use for retrieving specific information. Individual multiple regression results are presented in table 2.



**Table 2. Multiple regression and correlation analysis result**

(This table presents variables for importance of specific information and other independent variables that have either Beta coefficient or correlation coefficient significant at alpha level of .05)

### 1) Internet use for retrieving news about

	Beta coefficient	Correlation
Importance of news about U.S	.068*	.048*
Computer skills	.196	.179
Gender	.193	.212
Radio use	-.132*	-.205,

\* not significant at alpha level of .05

### 2) Internet use for retrieving news about Michigan

	Beta coefficient	Correlation
Importance of news about Michigan	.113*	.082*
Computer skills	.174	.151
Gender	.190	.194
Radio use	-.093*	-.135
Grade	-.247	-.029*
Newspaper use	-.176	-.094*
Age	.242	.133
Income	.121*	.209

\* not significant at alpha level of .05

### 3) Internet use for retrieving news about Lansing

	Beta coefficient	Correlation
Importance of news about Lansing	.272	.267
Grade	-.226	-.045*
Newspaper use	-.204	-.130
Age	.240	.122
Income	.107*	.233
Computer skills	.123*	.118
Radio use	-.108*	-.116

\* not significant at alpha level of .05

## 4) Internet use for retrieving news about international event

	Beta coefficient	Correlation
Importance of news about Intl event	-.076*	-.057*
Income	.231	.219
Computer skills	.190	.182
Radio use	-.190	-.215
Gender	.084*	.143
Newspaper use	-.121*	-.116

\* not significant at alpha level of .05

## 5) Internet use for retrieving information about library

	Beta coefficient	Correlation
Importance of information about library	.296	.303
Magazine use	.164	.076*
Computer skills	.221	.116
Radio use	-.226	-.184
Income	.125*	.170

\* not significant at alpha level of .05

## 6) Internet use for retrieving information about study

	Beta coefficient	Correlation
Importance of information about study	.233	.250
Grade	-.281	-.142
Computer skills	.193	.230
Income	.143	.173
Radio use	-.215	-.163
Age	.090*	.230

\* not significant at alpha level of .05

## 7) Internet use for retrieving information about sports

	Beta coefficient	Correlation
Importance of information about sports	.243	.251
Gender	.068*	.171
Computer skills	.204	.206
Income	.135*	.124
Ownership of computer	-.117*	-.160

\* not significant at alpha level of .05

## 8) Internet use for retrieving information about Business

	Beta coefficient	Correlation
Importance of information about business	.188	.148
Magazine use	.150	.061*
Income	.161	.189
Computer skills	.220	.177
Newspaper use	-.170	-.113
Radio use	-.159	-.179
Gender	.103*	.145

\* not significant at alpha level of .05

## 9) Internet use for retrieving information about entertainment

	Beta coefficient	Correlation
Importance of information about entertainment	.055*	.039*
Computer skills	.249	.214
Gender	.121*	.136

\* not significant at alpha level of .05

## 10) Internet use for retrieving information about computer

	Beta coefficient	Correlation
Importance of information about computer	.258	.396
Magazine use	.152	.027*
Gender	.137	.204
Newspaper use	-.225	-.184
Computer skills	.338	.362
TV use	-.013*	-.122
Radio use	-.087*	-.207

\* not significant at alpha level of .05

## 11) Internet use for communication(Email &amp; BBS)

	Beta coefficient	Correlation
Importance of communication need	.429	.467
Computer skills	.218	.256
Grade	-.213	-.209
Magazine use	-.033*	-.136

\* not significant at alpha level of .05

## 12) Internet use for retrieving information about other subject

	Beta coefficient	Correlation
Importance of information about other subject	.486	.504
Magazine use	.361	.147*
Computer skills	.482	.340
Newspaper use	-.524	.019*

\* not significant at alpha level of .05

Following results have been produced after synthesizing the multiple regression analysis. News about Lansing, information about library, information about study, information about sports, communication needs, and information about other subjects showed the highest Beta coefficient in each multiple regression equation. Information about business and information about computer has the second highest Beta coefficient in the equation. This result means that six multiple regression analysis confirm the H3. Two other multiple regression analysis also support the hypothesis.

Computer skills showed positive relationship with frequency of Internet use in all twelve multiple regression analysis. The higher the computer skills a user has, the more likely he/she is to use Internet to retrieve specific information. This implies that the interactive medium requires more active participation from the audience than traditional mass media where audience passively catch the message sent by the source. It is essential for a user to have an adequate level of computer skills to get access to information via Internet.

H2: Within the same demographic level, the higher the information need, the more a receiver will use Internet.

This hypothesis predicts that information need would have a stronger relationship with the frequency of Internet use when demographic factors are controlled. In other words, demographic variables would mask the relationship between the information need and frequency of Internet use. Partial correlation was used to examine the relationship between information need and frequency of Internet use with each demographic variable controlled. This hypothesis expects that partial correlation between information need and frequency of Internet use would be higher than original correlation between the two.

The following factors were partialled out for the analysis: gender, income, age, grade, computer ownership, computer experience, computer skills, father's education level, and mother's education level. In two cases partial correlation was bigger than zero order correlation between information need and frequency of Internet use which is  $r = .061$ . When income level is controlled, the partial correlation coefficient between information need and frequency of Internet use is  $.085(p = .191)$ . The partial correlation between information need and

frequency of Internet use is .073 when computer ownership is considered. Income has been identified as a variable that can influence Internet use by people in the former multiple regression analysis. According to partial correlation analysis, the relationship between information need and frequency of Internet use becomes more stronger when income level is controlled. In other words within the same level of income, information need is more closely related with frequency of Internet use.

### **Conclusion and discussion**

This study has both an exploratory and an explanatory nature in conducting the research. Identifying main motives which are associated with Internet use has an exploratory nature. This study also tried to examine causal relationships between Internet use and factors such as demographic factors, and specific information need.

The following four factors were identified as main motives for using Internet by factor analysis: “excitement”, “information seeking”, “interpersonal utility”, and “communication”. The “excitement” motive turns out to be the most important motive that can explain Internet use by students. Students use Internet to have enjoyment or to get relief from boredom. Just navigating various resources in Internet is considered to account for a fair amount of Internet use for students.

These four factors also make contributions in predicting frequency of Internet use and satisfaction from Internet use. A couple of multiple regression analysis revealed different contributions of each factor in predicting frequency of Internet use and satisfaction from Internet use. In predicting frequency of Internet use, the “communication” motive turned out to be the most important factor. People who want to use communication functions like e-mail processing or using a bulletin board service are most likely to use Internet frequently. In other words communication need is likely to motivate people to use Internet.

### **Comparing specific information need and demographic factors**

The main focus of this study is to examine the relative importance of demographic factors and specific information need in using Internet. Based on the new communication research paradigm for two-way interactive media which is “receivers-seeking-messages-from-source”, H1 expected that specific information need would be more important than demographic factors in predicting Internet use. In six cases of twelve multiple regression analysis, specific information need has a highest Beta coefficient in explaining Internet use. The six cases are news about Lansing( $r = .267$ ), information about library( $r = .303$ ), information about study( $r = .250$ ), information about sports( $r = .251$ ), communication need( $r = .467$ ), and information about other subject( $r = .504$ ). Information about business( $r = .148$ ), and information about computer( $r = .396$ ), has the second highest Beta coefficient in each multiple regression equation. That means specific information need can be considered the more important variable than demographic factors in using Internet. In sum, H1 is generally supported in the multiple regression analysis.

Two demographic factors show consistent patterns with relation to the use of Internet in the analysis. First, the gender factor has a significant relationship with Internet use in seven cases which include retrieving news about U.S.( $r = .212$ ), retrieving news about Michigan( $r = .194$ ), retrieving news about international event( $r = .143$ ), retrieving information about sports( $r = .171$ ), retrieving information about business( $r = .145$ ), retrieving information about entertainment( $r = .136$ ), and retrieving information about computer( $r = .204$ ). In all of these cases, male students use Internet more frequently than female students to find information. Generally speaking, male students are more likely to use Internet in order to find specific information.

In terms of correlation and Beta coefficient in multiple regression, spendable income per month has a significant relationship with frequency of Internet use in seven cases. The cases in which spendable income per month is positively related with frequency of Internet use are retrieving news about Michigan( $r = .209$ ), retrieving news about Lansing( $r = .233$ ), retrieving news about international event( $r = .219$ ), retrieving information about library( $r = .170$ ), retrieving information about study( $r = .173$ ), retrieving information about

sports( $r = .124$ ), and retrieving information about business( $r = .189$ ). Spendable income per month has a positive relationship with in all the seven cases. The magnitude of the relationship is considered modest with correlation coefficient ranging from .124 from .233. People with more spendable income are more likely use Internet to retrieve information they want.

Other demographic factors did not show any significant relationship with Internet. Only age has weak a correlation coefficient with two Internet uses which are retrieving news about Michigan( $r = .133$ ) and retrieving news about Lansing( $r = .122$ ). In this two cases age has positively correlated with Internet use. However, considering the fact that the sample has a little variance in terms of age, the age factor does not give a solid explanation for Internet use.

One noteworthy finding in this multiple regression analysis is the fact that computer skills has a positive correlation and relatively high Beta coefficient in all twelve cases. This result confirms the prediction that two-way interactive medium will put more responsibility on audience or users. The audience can not be considered 'passive receivers' any more for the interactive medium. The audience should be perceived as 'active information-seekers' who search for what they want. Communication ability(ex: computer skills for Internet) plays a very important role in getting access to information using a two-way medium. Users who lack the ability to meet the minimum requirement for using two-way media are expected to have difficulty in gaining information that they want. For information that they want, those people would rely on the media to which they can get easy access. In this context computer skills is considered an important factor which can explain Internet use by students.

### **Controlling demographic factors**

This study tried to control demographic factors in examining the relationship between the information need and Internet use. H2 expected that within the same demographic level, information need would show higher correlation with frequency of Internet use. However, partial correlation between the information need and frequency of Internet use with demographic factors controlled did not support this hypothesis strongly. Only two cases where income level and



computer ownership are held constant show higher partial correlation than zero order correlation between the information need and frequency of Internet use. In this case, information need is more strongly related to frequency of Internet use within the same income level. When computer ownership is controlled, information need is considered to have a stronger relationship with frequency of Internet use.

### **Limitation and suggestion for the future studies**

This study has been completed with a sample selected on a very limited scale. Since the sample was not randomly selected, this study lacks in external validity. Generalizability to a larger population can hardly be achieved by one isolated study which used nonprobability sample. It was also hard to observe much variance in demographic factors because all sample subjects are students enrolled in two telecommunication courses. Sample subjects show very little variance in age, spendable income per month, and other demographic factors. Considering the fact that the issue of this study is comparing the relative importance of specific information need and demographic factors in using Internet, the research would have produced more valid results with more variance in demographic factors. The research also would have resulted in more productive answers if it captured more regular users of Internet. Replication with a more representative sample is required to prove the solid theoretical framework and validity of the study.

Despite these limitations this research found that situational factors are more important in explaining use of two-way interactive media. It also found that some demographic factors also explain the different user behavior for Internet. Therefore, situational factors and demographic factors should be considered together in explaining the use of interactive media. This study clearly showed that the audience is more responsible for gaining information that they want when using a two-way medium.

## References

- Chaffee, S.H., & McLeod, J.M.(1973). Individual versus social predictors of information seeking. *Journalism Quarterly*, 50, 237-245.
- Clarke, P., & Kline, F.G.(1974). Media effects reconsidered: Some new strategies for communication research. *Communication Research*, 1, 224-239.
- Cohen, A.A.(1987). Decision making in VCR rental libraries: Information use and behavior patterns. *American Behavioral Scientist*, 30(5), 495-508.
- Cohen, A.A., Levy, M.R., & Golden, K.(1988). Children's uses and gratifications of home VCRs: Evolution or revolution. *Communication Research*, 15(6), 772-780.
- Dervin, B.(1980). Communication gaps and inequities: Moving toward a reconceptualization. *Progress in Communication Sciences Volume II*, 73-112.
- Donohue, G.A., Tichenor, P.J., and Loien, C.N.(1975). Mass media and the knowledge gap: A hypothesis reconsidered. *Communication Research* 2, 3-23.
- Ettema, J.S.(1985). Internet for news and business data: Comparison of user response to two information retrieval applications. *Telecommunication Policy* 9, 41-48.
- Frank, R.E., & Greenberg, M.G.(1980). *The public's use of television: Who watches and why*. Beverly Hills: Sage.
- Galloway, J.J., & Meek, F.L.(1981). Audience uses and gratifications: An expectancy model. *Communication Research* 8, 435-450.
- Genova, B.K.L., & Greenberg, B.S.(1979). Interests in news and the knowledge gap. *Public Opinion Quarterly* 43, 79-91.
- Greenberg, B.S.(1974). Gratifications of television viewing and their correlates for British children. In J.G. Blumler & E.Katz (Eds.), *The uses of mass communications: Current perspectives' on gratifications research*(pp. 71-92). Beverly Hills: Sage.
- Grunig, J.E., & Disbrow, J.(1977). Developing a probabilistic model for communications decision making. *Communication Research* 4, 145-168.
- Hanneman, G.J., & Greenberg, B.S.(1973). Relevance and diffusion of news on major and minor events. *Journalism Quarterly* 40, 433-437.
- Katz, E., Blumler, J.G., & Gurevitch, M.(1974). Utilization of mass communication by the individual. In J.G. Blumler & E. Katz(Eds.), *The uses of mass communications: Current perspectives on gratifications research*(pp. 19-32). Beverly Hills: Sage.
- Levy, M.R., & Windahl, S.(1984). Audience activity and gratifications: A conceptual clarification and exploration. *Communication Research* 11, 51-78.
- Miller, G.L.(1988). The concept of information: A historical perspective on modern theory and technology, *Information and Behavior*, 2, 27-53.
- Reagan, J.(1993). *From dependency to the repertoire of information sources*. Paper

- presented in BEA, Las Vegas, April. 1993.
- Ruben, B.D.(1985). The coming of the information age: Information, technology, and the study of behavior. *Information and Behavior 1*, 3-26.
- Rubin, A.M.(1981). An examination of television viewing motivations. *Communication Research 8*, 141-165.
- Rubin, A.M.(1983). Television uses and gratifications: The interactions of viewing patterns and motivation. *Journal of Broadcasting, 27*, 37-51.
- Rubin, A.M.(1984). Ritualized and instrumental television viewing. *Journal of Communication, 34*(3), 67-77.
- Salvaggio, J.L.(1985). From technological adoption to social problems: Four models of the process. *Information and behavior 1*.
- Stamm, K.R., & Grunig, J.E.(1977). Communication situations and cognitive strategies in resolving environmental issues. *Journalism Quarterly 54*, 713-720.
- Swanson, D.L.(1987). Gratification seeking, media exposure, and audience interpretations: Some directions for research. *Journal of Broadcasting & Electronic Media 31*(3), 237-254.
- Tichenor, P.J., Donohue, G.A., & Olien, C.N.(1970). Mass media flow and differential growth of knowledge. *Public Opinion Quarterly 34*, 159-170.
- Weaver, D.H. (1983). *Internet journalism: Teletext, viewdata and the news*. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Windahl, S.(1981). uses and gratifications at the crossroads. In G.C. Wilhoit & H.deBock (Eds.), *Mass communication review yearbook* (vol.2, pp. 174-185). Beverly Hills: Sage.
- Youn, S.(1998) *Theoretical basis for knowledge gap hypothesis and future research agenda*. Paper presented at Cybercommunication Academic Society seminar, Seoul, Korea.