韓國IT서비스學會誌
第13卷 第1號
2014年 3月, pp.71-86
http://dx.doi.org/10.9716/KITS.2014.13.1.071

가상공동체에서 지식탐색을 통한 지식공유에 관한 연구*

김 재 경**

Understanding Knowledge Sharing in Virtual Communities through Knowledge Seeking Behavior*

Jae Kyung Kim**

■ Abstract ■

This study investigated knowledge browsing behavior as the factor affecting the increase of knowledge sharing intention. To conduct this study in the specific context of knowledge seeking and sharing behavior of virtual community members, literature on knowledge seeking behavior, meta-knowledge, and knowledge sharing intention was reviewed. Structural Equation Modeling was conducted to analyze survey data to test the research model of this study. The result showed that knowledge browsing have positive effects on creating of virtual community members' subject knowledge and meta-knowledge, which, in turn, affected positively their knowledge sharing intention. One of the main contributions of this study is that knowledge seeking behavior influence one's knowledge sharing intention in a virtual community. Organization managers should consider knowledge seeking behavior as not only a self-interested, consuming activity, but also a productive one through its function of constructing subject knowledge and meta-knowledge.

Keyword : Knowledge Browsing, Knowledge Sharing, Virtual Community, Meta-Knowledge

논문투고일 : 2014년 01월 28일 논문수정완료일 : 2014년 03월 09일 논문게재확정일 : 2014년 03월 13일
* This research was supported by Hannam University Research Fund in 2014.
** 한남대학교 경상대학 경영정보학과

1. Introduction

Organizations consist of social, technical, human, and organizational systems. Organizational knowledge held within these systems has become one of the most important strategic resources and capabilities for organizations [15], strengthening innovation capability, competitive advantage, and dynamic capabilities [63]. Despite the enormous efforts and investments in knowledge management systems (KMS), it has generally been said that the knowledge retained within organizations is not fully utilized through these knowledge management (KM) initiatives [62].

According to the socio-technical perspective of information systems, the optimal performance of systems achieved through optimizing both the social and technical systems and the role of the human agent in the study of knowledge management system (KMS) is potential of critical importance because the people involved ultimately determine the system's success or failure due to their willingness to use the system by creating, sharing and utilizing knowledge [53].

Lack of attention on human aspect in knowledge management causes several deficiencies in current KM research literature. One deficiency this study investigated is that most of KM research has focused on knowledge sharing behavior, whereas activities such as knowledge seeking, acquisition and creation that occur earlier in the KM process have been ignored [23, 26].

Therefore, this study addresses two shortcomings in the KM literature that have received little attention; (1) the role of knowledge seeking behavior in KM process and (2) the relationship between generated knowledge as the results of knowledge seeking behavior and one's knowledge sharing intention. To examine the nature of knowledge seeking and knowledge generation, and those effects on knowledge sharing behavior in virtual communities, this study focuses on the following research questions : 1) Can knowledge seeking behavior be identified in virtual communities? 2) Can knowledge seeking behavior actually produce subject knowledge and meta-knowledge? and 3) How does subject knowledge and meta-knowledge relate to knowledge sharing intention?

2. Literature Review

2.1 Activities in Virtual Communities

The existing literature indicates that virtual

〈Table 1〉 Benefits of Traditional and Virtual Community

Benefits	Traditional Virtual Community	Online virtual community
Opportunity and development for affiliation or companionship	McClelland [44] Roberts [57] Rubenstein and Shaver [59]	Furlong [19], Hiltz [25], Meyer [47], Rheingold [55], Walther [64]
Sharing information, knowledge, idea	Kaufer and Carley [32]	Abbot [1], Kraut and Attewell[35], Wellman [69]
Accessing to information, knowledge, idea	Kaufer and Carley [32]	Constant [11], Finholt and Sproull [16], Whittaker [72]
Social, emotional support	Wellman and Whortley [69, 70] Wellman [67]	King [34], McCormick and McCormick [45], Rice and Love [56], Walther [65]
Collective action	Ostrom [52]	Organ [51]
Influencing people	Winter [72]	N/A

communities show varying social activities such as contributing and seeking of help, feedback, information resources through the reflection and monitoring in social interaction in terms of topical conversation [8, 13, 39, 47]. <Table 1> shows the benefits of joining traditional and virtual communities.

2.2 Knowledge Seeking and Sharing in Virtual Communities

Virtual communities provide places for the creation and sharing of knowledge on the Internet. Although the level of social interaction within virtual communities are lower comparing to that of traditional communities, ICT-enabled virtual community still shows that emotional attachment can grow and similar benefits can be achieved. Members who are interested in certain subject matters are the main resource of the virtual community since they represent the availability of resources. In terms of knowledge related behavior, the role of virtual community members can be categorized as knowledge seekers and sharers.

Based on the use of email and post in the community Blanchard and Markus [4] identify four types of virtual community membership as : (1) members who do not use both (labeled as lurkers) but browse the posted messages, (2) members who use only email, (3) members who post only messages, and (4) members who use both mail and post. She found that lurkers who show the least sense of virtual community still play important roles, but only in different ways from other more interactive members. Knowledge sharers are VC members who post information, opinion, experiences and respond to other members' request. They have knowledge and spend time, energy and other resources while involved in VC.

Knowledge seekers are another type of resource as audiences in virtual communities. Virtual community participants who are attracted by the main subject matters expect the virtual community has enough resources. They browse or search relevant information throughout the virtual community. One of such important roles of knowledge seekers would be their implication of audience of other members. If the information is not available or unclear in the existing format, seekers may post their questions or requests in the virtual community expecting the structure (through other members) to respond with proper answers or information. Responding to such inquiries, members provide information and knowledge (in the form of advice and their experiences).

2.3 Subject Knowledge and Meta-Knowledge

The results of knowledge seeking efforts in virtual communities are two forms of knowledge. As people seek knowledge in either directed or undirected way, they filter and sort the information, and construct their own understanding as knowledge about the subject matter. In addition, they also reflexively monitor and continuously gather information throughout the virtual community itself to make sense out of it during the knowledge seeking process [22] This type of knowledge is called meta-knowledge defined as knowledge about knowledge available to an individual. Nevo and Wand [49] identified four

different types of meta-knowledge; conceptual, cognitive, persuasive, and conceptual. Cognitive meta-knowledge [17] is the understanding about our own knowledge and abilities. Persuasive meta-knowledge is about source credibility, expertise, trustworthiness [24, 27]. Conceptual meta-knowledge is the information about ontology and the set of concepts needed to describe a domain. Descriptive meta-knowledge [31] deals with author information, scope of the knowledge, intended audience, cost of attaining the knowledge, format of the knowledge, and the date of knowledge. Cress et al. [12] also define prospective meta-knowledge as knowledge about the importance of one's own information to others. Meta-knowledge is also created by combining several types of knowledge (factual, experiential, and performance) during the knowledge seeking process [10].

Having high certainty on what others know as well as one's own knowledge is also valuable in terms of collaboration within organizations where members mutually rely on their expertise. Descriptive meta-knowledge will decide the appropriateness of one's knowledge to the collaborative task, while persuasive meta-knowledge helps accepting others expertise [43]. <Table 2> lists the type of meta-knowledge.

2.4 Knowledge Sharing Intention

According to Ajzen [2, p. 1981], intentions "are assumed to capture the motivational factors that influence a behavior; they are indications how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior." Knowledge sharing intention is a crucial variable for virtual community service providers in seeking to maintain or gain the main source [42]. Lee et al. [41] defined knowledge sharing intention as a user's intention to share knowledge. Thus, knowledge sharing intention in this study is defined as individuals' intention to share knowledge within the virtual communities.

〈Table 2〉 Categories of Meta-knowledge (Modified from Nevo and Wand [49, p.554])

Category		Examples	Reference
Introspective Meta-knowledge	Cognitive Meta-knowledge	Meta-memory; meta-cognitive knowledge-knowledge about our own knowledge and abilities	Flavell [17] Wegner [66]
	Prospective Meta-knowledge	Knowledge about the importance of one's own information to the others	Cress et al. [12]
Extrospective Meta-knowledge	Persuasive Meta-knowledge	Source credibility, expertise, trustworthiness	Higgins [24] Hovland et al. [27]
	Conceptual Meta-knowledge	Ontology : set of concepts needed to describe a domain. Meta-models : formalized descriptions of generalized concepts	Kalfouglou et al. [29] Plant and Gamble [54] Schwartz [60]
	Descriptive Meta-knowledge	Author information, scope of the knowledge, intended audience, cost of attaining the knowledge, format of the knowledge, date of knowledge, etc.	Basch [3] Katz [31] Stoker and Cooke [61]

3. Hypotheses Development

[Figure 1] presents the research model of this study. The hypotheses are developed based on the literature review and research framework.

3.1 Effect of Knowledge Seeking on Subject Knowledge

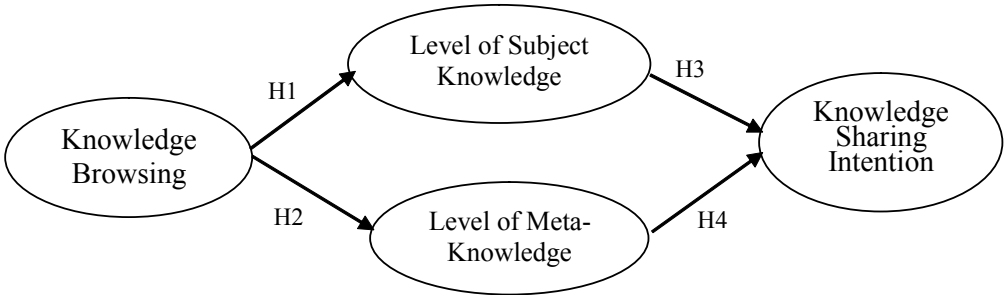
In KM process of varying studies such as Kuhlthau's ISP model [37, 39] and cognitive learning theory models [7, 14, 33], subject knowledge is constructed as the result of process either. Serendipitous knowledge acquisition and creation is also witnessed [9], implying knowledge browsing can generate certain unexpected acquisition or creation of subject knowledge. Therefore, I propose,

H1 : *A virtual community member's knowledge seeking is positively related to the level of subject knowledge.*

3.2 Effect of Knowledge Seeking on Meta-Knowledge

In addition to subject knowledge during the knowledge seeking process, varying types of meta-knowledge are also acquired or created. By engaging in knowledge seeking in virtual communities, members continuously build and refresh a set of concepts needed to understand the target knowledge (conceptual meta-knowledge). To evaluate the value of posted knowledge, virtual community members also check who posted it, whether posted knowledge is understandable, how difficult it is to obtain or whether it is valid and useful (descriptive meta-knowledge). During this evaluation in knowledge seeking, members continuously compare their existing knowledge with the newly presented knowledge to update or discard their own knowledge (cognitive meta-knowledge). In this process, they may realize whether posted knowledge is credible or worth to acquire in terms of accuracy and other subjective measures (persuasive meta-knowledge). Therefore, in knowledge seeking, varying types of meta-knowledge are not only created, but also utilized to evaluate and acquire the subject knowledge.

Connell [10] investigated the experienced users' meta-knowledge usage in subject searching tasks in online library catalogs and identified meta-knowledge rules users created for better search results. He argued that knowledge is



[Figure 1] Research Model

defined as factual, experiential, and process and meta-knowledge in the search process comes from the integration of these varying aspects of knowledge. The result indicated that meta-knowledge 'rules' were found based on the nature of search tasks and the progress of the search, which means that meta-knowledge is created during the search process by using knowledge of objects (factual knowledge), knowledge of events (experiential knowledge), and knowledge of performance.

Knowledge browsing also would produce meta-knowledge in a similar way. In the browsing mode, members actively seek knowledge, but in an undirected way by looking for a suitable source of knowledge they may acquire. In knowledge monitoring, members may have a certain direction of knowledge they want to obtain to achieve their objectives. While they browse or monitor the directories of the virtual community, they adopt a trial and error approach depending on the purpose of the search. Factual and experiential knowledge are gathered in addition to the subject knowledge even without knowing them consciously. Therefore, knowledge seeking through searching, browsing, and monitoring modes would increase the level of meta-knowledge. Hence, the following hypotheses are proposed,

H2 : *A virtual community member's knowledge seeking is positively related to the level of meta-knowledge.*

3.3 Effect of Subject Knowledge on Knowledge Sharing

Unlike knowledge seeking behavior which is natural and embedded in our basic instinct, knowledge sharing requires more effort to conduct. First, to give or present our knowledge to other members, we should be confident on the truthfulness (content authority) of our existing knowledge. If we are not sure whether our contributing (sharing) knowledge is actually truthful, we may not share that knowledge. Thus, the following hypothesis is proposed.

H3 : *A virtual community member's subject knowledge is positively related to his/her knowledge sharing intention within the virtual community.*

3.4 Effect of Meta-Knowledge on Knowledge Sharing

Virtual community members also have at least some knowledge about the importance of their information for others. This type of meta-knowledge is prospective meta-knowledge defined as knowledge about the importance of one's own information to others [12]. Cress et al. [12] argue that people use prospect meta-knowledge when they decide which information they will contribute in an effort to maximize the benefit to others. Knowledge self-efficacy [30], one's perception about what s/he can do with possessed skills, is a very similar concept to represent one's evaluative knowledge of his/her own knowledge and expertise on contribution to others. Knowledge self-efficacy is found a self-motivational factor of knowledge contribution in the electronic knowledge repository [5, 30]. Therefore, the following hypothesis is proposed.

H4 : *A virtual community member's meta-knowledge is positively related to his/her knowledge sharing intention within the virtual community.*

4. Research Methodology

4.1 Measurement Development

Several research methods are employed for the empirical portion of this dissertation. First, previous studies relating to knowledge seeking and sharing are reviewed to develop a research model that consists of following research variables : 1) knowledge searching, 2) subject knowledge, 3) meta-knowledge, and 4) knowledge sharing intention. Second, a survey was prepared to test the research model. Items were generated based on the literature review and initial qualitative interviews with 20 people using virtual community service to identify additional factors which were not developed through the literature review.

Finally, two statistical tools, SPSS 21 and Amos 21, were used to test 4 hypotheses of the research model. SPSS 21 was employed for the reliability test with values of Cronbach's α, and Amos 21 was applied for the validity tests, confirmatory factor analysis, path analysis through structural equation modeling (SEM) and goodness of fit tests of the research model. SEM is a statistical tool for developing multiple regression functions in a more complex way. There are many advantages of SEM when compared to multiple regression. Some of these advantages include : 1) use of confirmatory factor analysis can reduce measurement error, 2) tests of models with multiple dependent variables can be performed, 3) models with mediating variables can be tested rather than being restricted to an additive model, and 4) model error terms can be measured. Moreover, SEM compares alternative models to evaluate relative model fit where regression is highly susceptible to error in interpretation due to misspecification [20].

4.2 Data Collection and Sample Description

Five virtual communities in South Korea were randomly contacted by e-mail. A virtual communities granted permission for the investigator to collect data in its website. A hyperlink to the internet survey webpage was randomly announced to the members and visitors of the virtual community. 182 questionnaires were returned and 169 questionnaires were usable. Summary statistics for the respondents are shown in <Table 3>.

〈Table 3〉 Description of Samples

Demographic information	Category	Frequency (N=169)	Percentage (%)
Gender	Male	160	94.7
	Female	9	5.3
Age	20s	126	74.6
	30s	21	12.4
	40s	17	10.1
	50s and over	5	3
Education	College students	102	60.4
	College degree	57	33.7
	Graduate students	7	4.1
	Graduate degree	3	1.8
Occupation	Students	96	56.8
	White-collars	42	24.9
	Self-employed	18	10.7
	Professionals	5	3
	Sales	1	0.6
	Educators	5	3
	Others	2	1.2
Usage duration of Virtual Community	Less than 1 year	59	34.9
	More than 1	53	31.4
	More than 2	34	20.1
	More than 3	8	4.7
	More than 4	10	5.9
	More than 5	5	3

4.3. Analysis of Reliability and Validity

As this study used a survey method to gather data for analysis, two types of errors related to survey measurement need to be examined; random error and systemic error. Random errors are statistical fluctuations in the measured data due to the accuracy limitations of the measurement instrument. Systemic errors are reproducible inaccuracies due to any problems that occur consistently in the same direction [58], In general, reliability and validity analyses are used to evaluate these two errors.

Reliability is the consistency of a set of measurements. Reliability is the degree to which a variable or concept is measured consistently. Validity is the degree to which the intended variables are actually measured. Reliability and validity were examined by utilizing Cronbach's α and factor analysis. The desired lower limit for Cronbach's α is .7 [50]. Thus, the internal consistency of the measurement scales is verified. In other words, the various questions for each construct measured the same construct. <Table 4> shows the results of the reliability analysis.

4.4 Convergent and Discriminant Validities

Reliability tests look only at the items in the scale and do not compare across constructs. To compare one variable with other variables, a validity test should be performed. Confirmatory factor analysis was performed to establish factorial validity in SEM as Gefen and Straub [21] suggested. Confirmatory factor analysis measured construct validity. After the dropout and modification of measures from the previous confirmatory factor analysis, two additional va-

〈Table 4〉 Individual Item Reliability and AVEs for Latent Constructs

Latent Constructs	Item		Factor Loading	Cronbach's α	CR	AVE
Knowledge Browsing	KB 1	In general, I just click and read messages posted in the virtual community without realizing what I am looking for.	0.766	0.775	0.748	0.560
	KB 2	I am interested in SUBJECT 1 or SUBJECT 2 broadly, but don't have specific information.	0.838			
	KB 4	I routinely go to topic boards to find any interesting news, opinions, information, or events.	0.626			
Meta-knowledge	MK 2	I am aware of interesting topics in the community, but don't do actual seeking effort.	0.840	0.885	0.850	0.723
	MK 3	I am interested in SUBJECT 1, 2, 3 or SUBJECT 4, but don't exactly know where I can find the information in the community.	0.885			
	MK 4	I know what I am looking for in general, but seldom ask questions to find it.	0.825			
Subject Knowledge	SK 2	In this virtual community, I learned a lot about SUBJECT 2.	0.818	0.837	0.849	0.721
	SK 3	In this virtual community, I learned a lot about SUBJECT 3.	0.879			
Knowledge Sharing Intention	KSI 1	I intend to share my knowledge in the community.	0.913	0.892	0.832	0.692
	KSI 2	I intend to share my experience knowledge in the community.	0.979			
	KSI 3	I plan to share my opinion frequently.	0.691			
	KSI 4	I intend to keep posting news about SUBJECT 1 and other issues in this virtual community	0.707			

lidities were employed to ensure the validity of measures. Convergent validity and discriminant validity are both considered subcategories of construct validity.

Convergent validity adopts the measure of Average Variance Extracted (AVE) to gauge the percentage of explained variance by indicators relative to measurement errors. To establish convergent validity, AVE should be greater than 0.5 as suggested by Fornell and Larcker [18].

AVE value can also be used to measure the amount of variance that a latent variable component captures from its indicators. Fornell and Larcker [18] suggest AVE should be greater than 0.5 to account for 50% or more variance of indicators. <Table 4> lists Cronbach's α and AVEs for all latent variables.

4.5. Discriminant Validity

The way to establish discriminant validity is to compare the square root of the AVE of each construct to the correlations of this construct to all other constructs. Fornell and Larcker [18] suggest that the square root of AVE should be greater than the corresponding correlations among the latent variables. The result shown in <Table 5> demonstrate all latent variables exhibit high discriminant validity since each construct had a square root of AVE bigger than its correlations with other constructs. This result ensures that the measurement model has the discriminant validity.

4.6 Structural Model

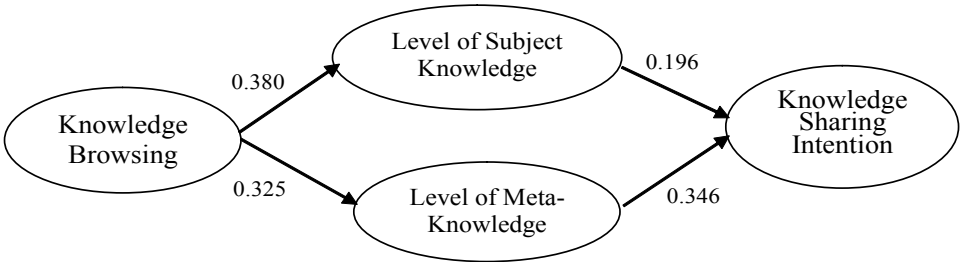
The structural model investigates the strength and direction of the relationships among theoretical latent factors. The structural model and hypotheses are tested by examining the path coefficients. In addition to the individual path tests, the explained variance in the dependent factors is assessed as an indication of the overall predictive strength of the model.

〈Table 5〉 Correlation Matrix and AVE for Latent Variables

Component	Knowledge Browse	Meta-knowledge	Subject Knowledge	Knowledge Sharing Intention
Knowledge Browse	**0.748**			
Meta-knowledge	0.310	**0.85**		
Subject Knowledge	0.364	0.214	**0.849**	
Knowledge Sharing Intention	0.317	0.378	0.251	**0.832**

〈Table 6〉 Results of Path Analysis

Path relationship	Estimate	Standardized Error	T-value	P	Result
H1. Knowledge Browsing → Meta-Knowledge	0.285	0.080	3.572	***	Supported
H2. Knowledge Browsing → Subject Knowledge	0.499	0.125	3.988	0.003	Supported
H3. Meta-Knowledge → Knowledge Sharing Intention	0.228	0.052	4.355	***	Supported
H4. Subject Knowledge → Knowledge Sharing Intention	0.086	0.036	2.390	.017	Supported



[Figure 2] Result of Path Analysis

Based on the research model in [Figure 1], four hypothesized paths are tested. <Table 6> and [Figure 2] show the results of the structural model. The path coefficients indicate the strength of paths. The t-values were used to determine if the hypothesized relationships were significant.

4.7 Goodness of Fit of the Research Model

There are several indexes for goodness of fit. In this study, chi-square, CFI, NFI, and SRMR were used to test the goodness of fit of the research model as recommended by Kline [35]. In this study, the overall fitness of the proposed research model is satisfactory on several measures for goodness of fit (x^2/df = 0.075, CFI = 0.987, NFI = 0.946, RMSEA = 0.043). <Table 7> summarizes the results of goodness of fit indicators.

5. Discussion

This study dealt with knowledge seeking and sharing behavior in the virtual community. Based on previous studies, three knowledge seeking behaviors were identified to study their relationships with knowledge sharing intention. Knowledge seeking behaviors were found to be key factors influencing on gains of subject knowledge and meta-knowledge.

This study also identified the indirect positive relationship between knowledge seeking behavior and knowledge sharing via one's gain of subject knowledge and meta-knowledge. Knowledge management is composed of varying activities such as knowledge seeking, acquiring, storing, sharing, and utilization, and the relationships among these activities had been unexplored. Even among existing literature on knowledge sharing, no studies had studied from the knowledge seeking pers-

〈Table 7〉 Results of Goodness of Fit Test

Goodness-of-fit Measures	Values	Recommended Values
x^2 / df	0.075(63.885/49)	< 1 interpreted, 2~5 Good, < 2 overfitting [46]
Comparative Fit Index (CFI)	0.987	> 0.90 good [28]
Normed Fit Index (NFI)	0.946	0.8 cuffoff [20] > 0.90 good [28]
Root Mean Square Error of Approximation (RMSEA)	0.043	< 0.08 good, < 0.05 excellent [6]

pective, to the author's knowledge.

On the practical side, this study provides a better understanding of knowledge behavior for virtual community operators in detail, and for KM managers of organizations at large. While managers and operators have clear understanding why community members visit virtual communities (seeking valuable subject knowledge), and objectives of the virtual community (providing valuable subject knowledge with critical mass of the traffic), the way to achieve these objectives are not clear. This study provides one of many mechanisms why members intend to share knowledge. As members seek specific subject knowledge, they also gain meta- knowledge. These two types of knowledge encourage people to share knowledge on to the virtual community. While knowledge seeking is a main concern of virtual community members, knowledge sharing from community member is the main concern of virtual community operators. By providing a mechanism how these two contrasting concerns could work harmoniously, a virtuous circle of seeking and sharing knowledge in VC could be achieved. In summary, the operators of virtual communities should understand the important role of knowledge seeking behavior which leads to sustaining and growing virtual community. The finding of this research could improve operational effectiveness of the virtual communities in that sense.

6. Limitation and Future Research

Although the findings are meaningful and useful, this study has certain limitations which require future research. Data used in this study may not be representative of the population of virtual community members as the survey was conducted within a single site, which is male-dominated (94.8%). This is a definite weakness of this research in term of generalizability of the study. Thus, future studies need to collect data from a wide population from varying virtual communities, then investigate whether differences among various demographic groups exist. A single survey site could also limit the validation of research finding. Data employed in this study was not segmented by types of subject matter virtual community mainly concern. Multimedia based virtual community such as YouTube.com could result in different findings from purely text based virtual community which is the case of this study.

References

[1] Abbot, A., *The System of Professions: An Essay on the Division of Expert Labor*, Chicago, IL : University of Chicago Press, 1988.

[2] Ajzen, I., "The theory of planned behavior", *Organizational Behavior and Human Decision Processes*, Vol.50(1991), pp.179-211.

[3] Basch, R., "Measuring the quality of the data : report on the fourth annual SCOUG retreat", *Database Searcher*, Vol.6, No.8 (1990), pp.18-24.

[4] Blanchard, A. and M. L. Markus, "The experienced "sense" of a virtual community : Characteristics and processes", *The DATA BASE for Advances in Information Systems,* Vol.35, No.1(2003), pp.64-71.

[5] Bock, G. W., R. W. Zmud, Y. G. Kim, and

J. N. Lee, "Behavioral intention formation in knowledge sharing : examining the roles of extrinsic motivators, social-psychological forces, and organizational climate", *MIS Quarterly*, Vol.29, No.1(2005), pp.87-111.

[6] Browne, M. W. and R. Cudeck, "Alternative ways of assessing model fit", in Kenneth A. Bollen and J. Scott Long (Eds.), *Testing Structural Equation Models*, Newbury Park : Sage, (1993), pp.136-162.

[7] Bruner, J., *Beyond the Information Given : Studies in Psychology of Knowing*, New York : W.W. Norton and Co., 1973.

[8] Butler, B. S., "Membership size, communication activity, and sustainability : a resource-based model of online social structures", *Information Systems Research*, Vol. 12, No.4(2001), pp.346-336.

[9] Cerri, S. A., V. Loia, S. Maffioletti, and A. Bettinelli, "Serendipitous acquisition of Web knowledge by Agents in the context of Human Agents in the Context of Human Learning" in Proceedings of THAI-ETIS : European Symposium on Telematics, Hypermedia and Artificial Intelligence, (1999), pp.1-25.

[10] Connell, T. H., "Subject searching in online catalogs : metaknowledge used by experienced searchers", *Journal of the American Society for Information Science*, Vol. 46(1995), pp.507-518.

[11] Constant, D., L. Sproull, and S. Kiesler. "The kindness of strangers : The usefulness of electronic weak ties for technical advice", *Organization Science*, Vol.7(1996), pp.119-135.

[12] Cress, U., B. Barquero, S. Schwan, and F. W. Hesse, "Improving quality and quantity of contributions : Two models for promoting knowledge exchange with shared databases", *Computers and Education*, Vol. 49, No.2(2007), pp.423-440.

[13] Curtis, D.D. and M.J. Lawson "Exploring collaborative online learning", *Journal of Asynchronous Learning Networks*, Vol.5, No.1(2001), pp.21-34.

[14] Dewey, J., *How We Think*, Boston, MA : D.C. Heath and Company, 1933.

[15] Drucker, P. F., "The coming of the new organization", in *Harvard Business Review on Knowledge Management*, Boston, MA : Harvard Business School Press, (1998), pp.1-19.

[16] Finholt, T. and L. Sproull, "Electronic groups at work", *Organization Science*, Vol.1, No.1 (1990), pp.41-64.

[17] Flavell, J. H., "Metacognition and cognitive monitoring : a new area of cognitive developmental inquiry," *American Psychologist*, Vol.34(1979), pp. 906-911.

[18] Fornell, C. and D. F. Larcker, "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol.48 (1981), pp.39-50.

[19] Furlong, M. S., "An electronic community for older adults : the Senior Net network", *Journal of Communications*, Vol.39, No.3 (1995), pp.145-153.

[20] Garson, G. D., *Structural Equation Modeling*, Statistical Associates Publishers, Amazon Digital Service, 2012.

[21] Gefen, D. and D. Straub, "A practical guide to factorial validiy using pls-graph : tutorial and annotated example", *Commu-*

nications of the Association for Information Systems, Vol.16(2005), pp.91-109.

[22] Giddens, A., *The Constitution of Society*, Berkeley, CA : University of California Press, 1984.

[23] Grover, V. and T. H. Davenport, "General perspectives on knowledge management : fostering a research agenda", *Journal of Management Information Systems*, Vol.18, No.1(2001), pp.5-21.

[24] Higgins, M., "Meta-information, and time : factors in human decision making", *Journal of the American Society for Information Science*, Vol.50, No.2(1999), pp.132-139.

[25] Hiltz, S. R. *Online Communities : A Case Study of the Office of the Future*, Norwood, NJ : Ablex Publishing, 1985.

[26] Holsapple, C. W. and K. D Joshi, "Knowledge management : a three-fold framework", *The Information Society*, Vol.18, No. 1(2001), pp.47-64.

[27] Hovland, C. I., I. L. Janis, and H. H. Kelley, *Communication and Persuasion*, New Haven : Yale University Press. 1953.

[28] Jöreskog, K. G. and D. Sörbom, "Model search with TERRAD II and LISREL", *Sociological Methods and Research*, Vol. 19(1989), pp.201-210.

[29] Kalfoglou, Y., T. Menzies, K. D. Althoff, and E. Motta "Metaknowledge in systems design : panacea or undelivered promise?" *Knowledge Engineering Review*, Vol.15, No.4(2000), pp.381-404.

[30] Kankanhalli, A., B. C. Y. Tan, and K. K. Wei, "Contributing knowledge to electronic knowledge repositories : an empirical investigation", *MIS Quarterly,* Vol.29, No. 1(2005), pp.113-143.

[31] Katz, W. A., *Introduction to Reference Work*, New York : McGraw-Hill, 1992.

[32] Kaufer, D. S. and K. M. Carley, *Communication at a Distance : The Influence of Print on Sociocuttural Organization and Change*, Hillsdale, NJ : Lawrence Erlbaum, 1993.

[33] Kelly, G. A., *Principles of Personal Construct Psychology*, New York : W. W. Norton and Co., 1995.

[34] King, S., "Analysis of electronic support groups for recovering addicts", *Interpersonal Computing and Technology*, Vol.2, No.3(1994), pp.47-56.

[35] Kline, R. B., *Principles and Practices of Structural Equation Modeling*, New York : Guilford. 2004.

[36] Kraut, R. E. and P. P. Attewell, "Electronic mail and organizational knowledge", in S. Kiesler (Ed.) *Research Milestones on the Information Highway*, Mahwah, NJ, Lawrence Erlbaum, 1996.

[37] Kuhlthau, C. C., "Information search process : a summary of research and implications for school library media programs", *School Library Media Quarterly*, Vol.18, No.5(1989), pp.19-25.

[38] Kuhlthau, C. C., "Inside the search process : information seeking from the user's perspective", *Journal of the American Society for Information Science*, Vol.42, No.5(1991), pp.361-371.

[39] Kuhlthau, C. C., *Seeking Meaning : A Process Approach to Library and Information Services*, Westport, CT : Libraries Unlimited, 2004.

[40] Lampel, J. and A. Bhalla, "The role of status seeking in online communities : Gi-

ving the gift of experience", *Journal of Computer Mediated Communication*, Vol. 12(2007), pp.434-455.

[41] Lee, M. K. O., C. M. K. Cheung, K. H. Lim, and C. L. Sia, "Understanding customer knowledge sharing in web-based discussion boards : an exploratory study", *Internet Research*, Vol.16, No.3(2006), pp. 289-303.

[42] Lin, H. F., "Impact of organizational support on organizational intention to facilitate knowledge sharing", *Knowledge Management Research and Practice*, Vol.4, No. 1(2006), pp.26-35.

[43] Malhotra, Y., "Information ecology and knowledge management : toward knowledge ecology for hyperturbulent organizational environments", in Tschangho John Kim (Ed.) *Encyclopedia of Life Support Systems*, Oxford, UK: Eolss Publishers, 2002.

[44] McClelland, D. G., "How motives, skills, and values determine what people do", *American Psychologist*, Vol.40(1985), pp.812-825.

[45] McCormick, N. and J. McGormick, "Computer friends and foes : content of undergraduates' electronic mail", *Computers in Human Behavior*, Vol.8, No.4(1992), pp. 379-405.

[46] Medsker, G., L. Williams, and P. J. Holahan, "A review of current practices for evaluating causal models in organizational behavior and human resources management research", *Journal of Management*, Vol.20, No.2(1994), pp.439-464.

[47] Meyer, G. R., "The social organization of the computer underground", Master's thesis. Northern Illinois University, Dekalb, IL. 1989.

[48] Moreland, R. L. and J. M. Levine, 'Group composition : Explaining similarities and differences among group members', in Michael A. Hogg and Joel M. Cooper (Eds.) Sage *Handbook of Social Psychology,* London : Sage, (2003), pp.367-380,

[49] Nevo, D. and Y. Wand, "Organizational memory information systems : a transactive memory approach", *Decision Support Systems*, Vol.39, No.4(2005), pp.549-562.

[50] Nunnally, J. C. and I. H. Berstein, *Psychometric Theory*, New York : McGraw-Hill, 1994.

[51] Ogan, C., "Listserver communication during the Gulf War : what kind of medium is the bulletin board?" *Broadcasting and Electronic Media,* Vol.37, No.2(1993), pp. 177-196.

[52] Ostrom, E., *Governing the Commons : The Evolution of Institutions for Collective Action*, New York : Cambridge University Press, 1990.

[53] Pasmore, W. A., "Social science transformed : The socio-technical perspective", *Human Relations*, Vol.48, No.1(1995), pp.1-21.

[54] Plant, R. and R. Gamble, "Using meta-knowledge within a multilevel framework for KBS development", *International Journal of Human-Computer Studies*, Vol.46 (1997), pp.523-547.

[55] Rheingold, H., *The Virtual Community : Homsteading on the Electronic Frontier*, Reading, MA : Addison-Wesley, 1993.

[56] Rice, R. E. and G. Love, "Electronic emotion : Socioemotional content in a computer-mediated communication network", *Communication Research*, Vol.14, No.1(1987), pp.85-108.

[57] Roberts, T. L., "Are newsgroups virtual

communities?", in Proceedings of the SIG-CHI conference on Human factors in computing system, Los Angeles, CA, 1998.

[58] Rosenthal, R. and R. L. Rosnow, *Essentials of Behavioral Research : Methods and Data Analysis, 3rd Edition*. New York : McGraw-Hill, 2008.

[59] Rubenstein, C. M. and P. Shaver, "Loneliness in two northeastern cities", in Hartog, J. and Audy, R. (Eds.), The Anatomy of Loneliness, New York : International Universities Press, 1980.

[60] Schwartz, D., "When e-mail meets organizational memories : addressing threats to communication in a learning organization", *International Journal of Human-Computer Studies*, Vol.51, No.3(1999), pp. 599-614.

[61] Stoker, D. and A. Cooke, "Evaluation of networked information sources", in Proceedings of the 17th International Essen Symposium, (1994), pp.287-312.

[62] Swan, J. A., S. Newell, and M. Robertson, "Limits of IT-driven knowledge management initiatives for interactive innovation processes : towards a community-based approach", in Proceedings of 33rd Annual Hawaii International Conference on Systems Sciences, Maui, Hawaii, 2000.

[63] Teece, D. J., *Managing Intellectual Capital : Organizational, Strategic, and Policy Dimensions*, Oxford : Oxford University Press, 2000.

[64] Walther, J. B., "Anticipated ongoing interaction vs. channel effects on relational communication in computer-mediated interaction", *Human Communication Research*, Vol.40(1994), pp.473-501.

[65] Walther, J. B., "Computer-mediated communication : Impersonal, interpersonal, and hyperpersonal interaction", *Communication Research*, Vol.22(1996), pp.33-43.

[66] Wegner, D. M., "Transactive memory : a contemporary analysis of the group mind", in Brian Mullen and Geroge R. Goethals (Eds.), *Theories of Group Behavior,* New York : Springer-Verlag, (1987), pp.185-208.

[67] Wellman, B., "The place of kinfolk in community networks", *Marriage and Family Review*, Vol.15, No.1/2(1990), pp.195-228.

[68] Wellman, B. "Lay referral networks : using conventional medicine and alternative therapies for low back pain", *Research in the Sociology of Health Care*, Vol.12(1995), pp. 213-238.

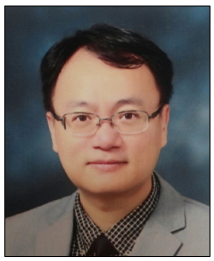
[69] Wellman, B. and S. Whortley, "Brothers' keepers : Situating kinship relations in broader networked of social support", *Sociological Perspectives*, Vol.32(1989), pp. 273-306.

[70] Wellman, B. and S. Whortley, "Different strokes from different folks : Community ties and social support", *American Journal of Sociology*, Vol.96(1990), pp.558-588.

[71] Whittaker, S., "Talking to strangers : an evaluation of factors affecting electronic collaboration", in Proceedings of the 1996 ACM Conference on Computer Supported Cooperative Work, Cambridge, MA, (1996), pp.409-418.

[72] Winter, D. G., *The Power Motive*, New York : Free Press, 1973.

◈ 저 자 소 개 ◈



김 재 경 (kjkkej@hnu.kr)

미국 Ohio주 Miami University에서 경영정보학 석사(MBA)를 하고, University of Nebraska-Lincoln에서 지식경영 연구로 경영학 박사(Ph.D.)를 받았다. 현재 한남대학교 경영정보학과 교수로 재직 중이며 주요 관심분야로 지식경영, 소셜미디어, 미디어중독 등이며, Omega, Decision Support Systems, Int. J. of Electronic Commerce, Service business 등에 다수 논문을 실었다.