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의사결정스타일이 GDSS활용에 미치는 영향*

최 무 진**

The Effects of Decision Style (Feeling vs. Thinking) on the Use of GDSS

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One stream of the GDSS (Group Decision Support System) research is to investigate how GDSS affects decision performances of small groups according to task types, support features, meeting facilitation modes and meeting environments. But little study has investigated the effects of group member characteristics on group decision processes and outcomes depending upon whether GDSS is provided or not. To date, most GDSS studies have not controlled group member characteristics (e.g. personality, sex, decision style) in laboratory experiments. However, this study included the decision styles of group members as an independent variable. Therefore, this study investigated how differently members of two different decision styles perceive the use of GDSS in small group meetings through lab experiments. The two decision styles are feeling(F) style and thinking(T) style.

We found that the effect of GDSS is a function of individual's decision style only in the communi- cation thoroughness variable. The decision style is a statistically significant factor that can mediate the effects of the group support technology on the perceived communication thoroughness. Specifically, the GDSS is positively related to participants' perception about satisfaction on decision process, goal achievement, communication thoroughness, degree of influence-outward and effort for achieving meeting goals.

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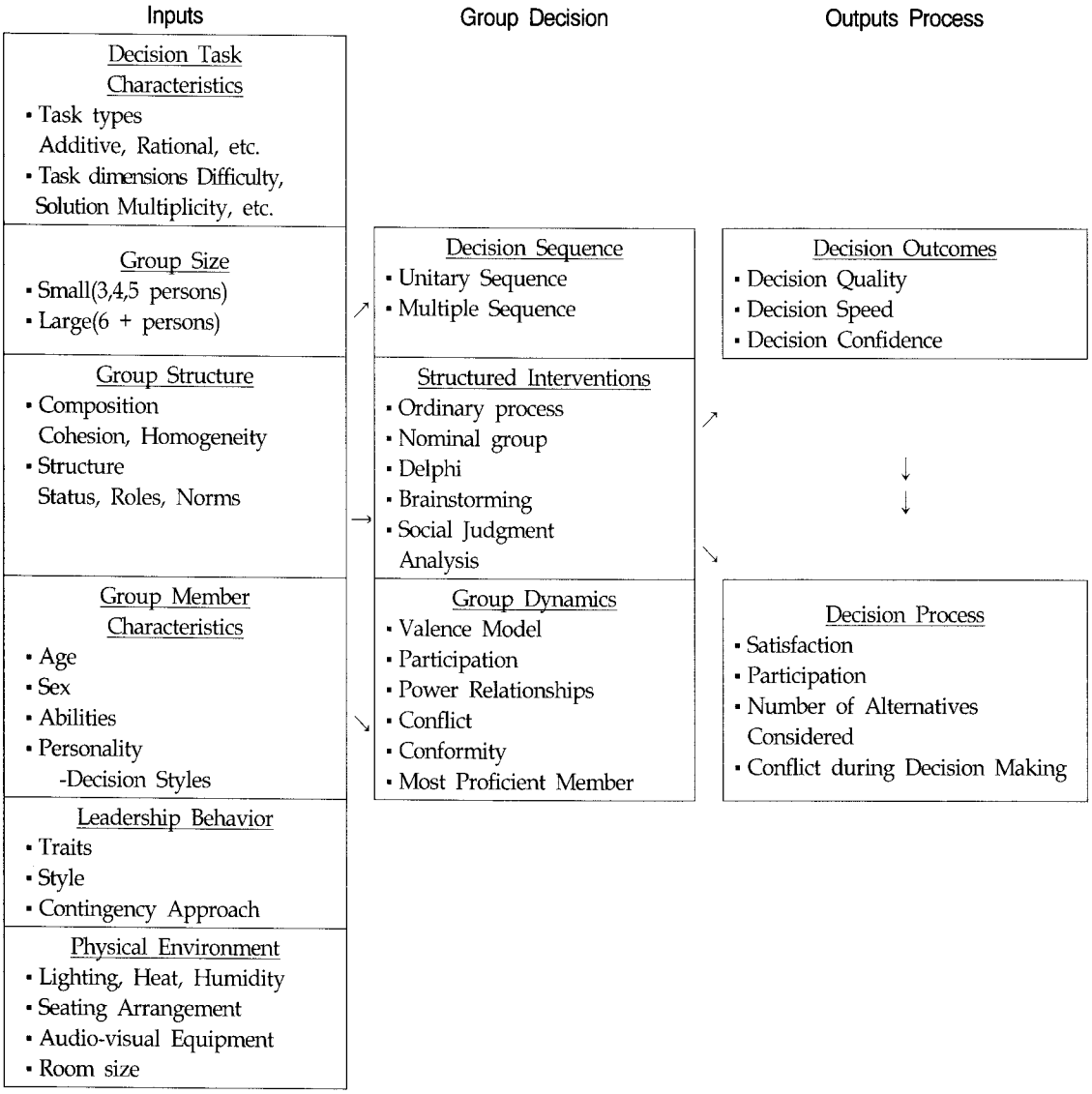
Ⅰ. Introduction

The escalating demand for quick and sound decision-makings in a competitive business environment has forced managers to consider the effectiveness and efficiency of group decision seriously. "Groupthink" has been widely studied, and, therefore, numerous group theories and decision support technology have been developed to improve group meeting performances [Janis, 1972; Hackman and Morris, 1978; Maier, 1980; Napier and Gershenfeld, 1981]. Recent information technology in teleconferencing, LAN (local area network) and various group aid software have proposed many innovative uses for improving the effectiveness of group collaborative tasks. For instance, group decision support system (GDSS) is an evolving technology that combines communication, computer and decision technology to support problem formulation and solving in face-to-face group meetings [DeSanctis and Gallupe, 1987].

Since the number of GDSS studies is countless, reviewing all of them is beyond the scope of this research. The trend, major issues and future direction of GDSS research are well documented in DeSanctis and Gallupe [1987] and Rao and Jarvenpaa [1991]. One stream of the GDSS research is investigating how differently the GDSS technology affects group decision performances according to task types [Gallupe and DeSanctis, 1988; Jarvenpaa and Rao, 1988], support features [Connolly, Jessup and Valacich, 1990; Jarvenpaa, Rao and Huber, 1988]), facilitation modes [Dickson, Partridge and Robinson, 1993], and meeting environments [Chidambaram and Jones, 1993]. However, many studies about rewards of the GDSS have reported inconsistent results; some reported an increase in satisfaction (e.g. Jessup, Connolly and Galegher, 1990], while others reported a decrease (e.g., [Gallupe and DeSanctis, 1988]). This implies the existence of factors underneath which have not been fully explored in the GDSS research. Therefore, we argue that group member characteristics would be these variables that can mediate the effects of GDSS on the decision processes and outcomes. But little study has been done about how group member characteristics affect the group decision processes and outcomes depending upon whether GDSS is provided or not [Yellen and Winnieford, 1995]. Most GDSS research has not included group members' personality traits as a control variable in experiments. This study, therefore, investigated how differently members of two different decision styles (feeling and thinking style) perceive the decision processes and outcomes depending upon whether a GDSS is provided or not.

Ⅱ. Review of Research

Many studies [Hoffmann, 1965; Hare, 1976; Fisher, 1974; McGrath, 1984] have reported that factors affecting group decision making can be divided into seven categories: decision task characteristics, group decision process variables, group size, group structure, group member characteristics, leadership behavior and physical environment. These variables are summarized in <Figure 1> (adopted from [Gallupe, 1985]). Since reviewing all literature pertinent to these factors is beyond the scope of this study, this section focuses on group member characteristics and structure only.



<Figure 1> Important Variables in the Study of Group Decision Making (adapted from Gallupe (1985))

The impact of group member characteristics on group decision making has been widely mentioned, but group decision technology was not considered. Four major individual's characteristics are age, sex, ability (intelligence, skills, etc) and personality [Gallupe, 1985]. Especially, the personality trait is a tendency or a predisposition to behave in certain ways in certain situations [Shaw, 1981] so that in the group meeting, the behavior is mediated by personality [Gallupe, 1985].

Myers [1962] developed the Myers-Briggs Type Indicator (MBTI) to predict individual's personality trait which incorporated sensation, thinking, intuition and feeling, four psychological types introduced by Jung [1971]. Jung [1971] identified

Decision Style / Characteristics	Sensation/ Thinking (ST)	Intuition/ Thinking (NT)	Sensation/ Feeling (SF)	Intuition/ Feeling (NF)
Focus of Attention	Facts	Possibilities	Facts	Possibilities
Method of Handling Things	Impersonal analysis	Impersonal analysis	Personal warmth	Personal warmth
Tendency to Become	Practical and matter of fact	Logical and ingenious	Sympathetic and friendly	Enthusiastic and insightful
Expression of Abilities	Technical skills with facts and objects	Theoretical and technical development	Practical help and services for people	Understanding and communicating with people

<Figure 2> Characteristics of Four Decision Styles

two dimensions of human information processing (HIP): perception (gathering information) and judgment (processing information). Perception is achieved by either sensation (S) or intuition (N); judgment is made by either thinking (T) or feeling (F). Paring a mode of perception with a mode of judgment yields four basic decision styles: sensation/thinking (ST), intuition/ thinking (NT), sensation/feeling (SF), and intuition/feeling (NF). These four decision styles are arranged in sequence from left to right along the top of <Figure 2>. Myers [1976] distinguished these styles in terms of (1) personal focus of attention, (2) method of handling things, (3) tendency of become, and (4) expression of abilities. These characteristics are listed in the left column of <Figure 2>.

The ST processing style relies on sensing of the environment for perception and rational thinking for judgement. Individuals of ST style more likely attend to facts and handle them with personal analysis. Therefore, they tend to be practical and matter of facts and therefore develop abilities more easily in technical work with facts and objects. In contrast, NF style relies on intuitive perceptions and nonrational feeling of judgment. Such individuals attend to possibilities and handle them with personal warmth. In contrast, NT people attend to possibilities, as do ST's, but they handle them with personal warmth, like NF's. Individuals of SF style tend to be sympathetic and friendly [Taggart and Robey, 1981].

Taggart and Robey [1981] further argue that the NT and SF style, the two intermediate types, can be considered less indicative of dominant functions of human brain's right and left hemisphere in terms of information processing styles. The placement of NT to the left of SF indicates that thinking (T) judgment is more similar to the characteristics of left hemisphere of our brain (performing logical and analytical processing) than is intuitive (N) perception. In contrast, the feeling (F) type is dominated by the right hemisphere of brain (performing non-logical and synthetic processing), which pulls the SF style persons to the right of the NT. The implication is that the second dimension of "judgment" takes precedence over the first dimension of "perception"; in other words, characterization of four styles depends more on how information is processed (how to judge) than on how it is gathered (how to perceive). Therefore, this study focuses on the

two extreme type of information processing (judgment styles): feeling and thinking.

Similar to Jung's two dimensions of information processing, McKenney and Keen [1974] classified managers based on slightly different two dimensions. One is information-gathering dimension that classified managers into perceptive style (fitting data into preconceived categories) or receptive style (sensitive to the data themselves). Another is labeled information evaluation dimension that classified managers into either systematic (using a structured approach to decision making) or intuitive (relying on trial and error). The authors also discovered that the "systematic" subjects are very likely to be of the "thinking" style and the "intuitive" subjects are much more likely to be at the other end of the scale, "feeling" of the MBTI indicators.

Many studies based on the four types of information processing have been conducted and have suggested useful implications for the GDSS research. Mitroff and Kilmann [1976] analyzes a content of managers' stories about their "ideal organizations" using the MBTI. Managers of intuition-thinking(NT) style emphasize broad, global issue. They offer "theories" of organization and are impersonally idealistic. On the other hand, while managers of intuition-feeling(NF) style stress global issues like those of the NT style, they tend to focus on general, personal and humanistic values. For the NF managers, the organization exists to serve mankind.

Henderson and Nutt [1980] also investigates a relationship between cognitive style and risk taking and the adoption of hypothetical capital expenditure proposals using the MBTI. They found that managers of sensing and thinking (ST) style are more reluctant to adopt the proposals and see most risk in making decisions, whereas those of sensing and feeling (SF) style tolerate greater risk and are more likely to adopt the same projects.

In summary, this study focuses on the impact of group member characteristics, specially decision style (thinking and feeling) on group decision processes and outcomes that have been little considered in the previous GDSS literature.

Ⅲ. Hypotheses

Many studies have indicated or implied that the group decision performance is affected by the group member characteristics, particularly individual's personality style [Mitroff and Kilmann, 1976; McGrath, 1984; Gallupe, 1985; Yellen et al., 1995]. Therefore, the main question addressed by this research is "how differently members of feeling and thinking decision style perceive the group meeting process and outcomes depending upon whether a GDSS is provided or not." To test these relationships, we developed 9 hypotheses corresponding to 9 dependent variables that measure the group performance: i) variables measuring perceptions on decision outcomes (H1-H3) and ii) variables measuring perceptions on decision process (H4-H9). The directions of relationships are not specified because it is difficult to predict the direction of effects due to the lack of previous references.

H1: Satisfaction on Decision Outcomes

The members of feeling and thinking style supported by a GDSS will perceive different

levels of satisfaction from those not supported by a GDSS respectively.

H2: Perceived Goal Achievement

The members of feeling and thinking style supported by a GDSS will perceive different levels of perceived goal achievement from those not supported by a GDSS respectively.

H3: Agreement on Decision Outcomes

The members of feeling and thinking style supported by a GDSS will perceive different levels of agreement on the decision outcomes from those not supported by a GDSS respectively.

H4: Satisfaction on Decision Processes

The members of feeling and thinking style supported by a GDSS will perceive different levels of satisfaction on the decision processes from those not supported by a GDSS respectively.

H5: Communication Thoroughness

The members of feeling and thinking style supported by a GDSS will perceive different levels of communication thoroughness from those not supported by a GDSS respectively.

H6: Group Familarity

The members of feeling and thinking style supported by a GDSS will perceive different levels of familarity with those not supported by a GDSS respectively.

H7: Degree of Influence-outward

The members of feeling and thinking style supported by a GDSS will perceive different levels of outward-influence from those not supported by a GDSS respectively.

H8: Degree of Influence-inward

The members of feeling and thinking style supported by a GDSS will perceive different levels of inward influence from those not supported by a GDSS respectively.

H9: Effort for Achieving Meeting Goals

The members of feeling and thinking style supported by a GDSS will perceive different levels of effort for achieving meeting goals from those not supported by a GDSS respectively.

Ⅳ. Research Methods

4.1 Task Type

McGrath [1984] described a comprehensive, circumplex model of group task types. The circumplex model is made of 8 types of task: planning tasks, creativity tasks, intellective tasks, decision-making tasks, cognitive conflict tasks, mixed-motive tasks, contests/battles/com petitive tasks, and performance/psycho-motor tasks.

A general, comprehensive type of task requiring participants' creativity, intelligence and choice was developed for this experiment in order to eliminate the possible effects of task types on the group performance. Specifically the participants were requested i) to discuss issues and topics related to the development of the MIS department, ii) to sort and select major issues, iii) to brainstorm detailed pro-

blems and solutions for each issue, and finally iv) to select and rank the top-ten list of solutions that are most important and urgent for the long-run prosperity of the MIS department. This agenda requires both creativity and intelligence to generate a variety of issues, topics, detailed problems and solutions relevant to the prosperity of the MIS department. Group members were also required to rank the solutions and to select a top-ten list based on voluntarily selected criteria.

4.2 Decision Style Test

The MBTI (Myers-Briggs Type Indicator) test was used to determine decision styles of individuals. The MBTI was based on the psychological type theory of Jung [1971], and was further developed by Briggs and Myers from 1900 to 1975 [1997]. A total of 94 questions is designed to predict 4 preference indicators of individuals: direction of energy (extroversion vs. introversion), information processing style (sensing vs. intuition), judgement style (thinking vs. feeling) and life style (judging vs. perceiving). <Table 1> summarizes 4 preference indicators. Since this test has a long history of reviewing its reliability and validity, therefore it has relatively strong references about such issues.

At beginning, 84 students took the MBTI test administered by a certified counselor. As a result, 44 and 40 students were identified as feeling and thinking style respectively.

<Table 1> Four Types of Preference Indicator

Indicator	Preference
Extroversions(E)-Introversion(I)	To which direction energy goes.
Sensing(S) - Intuition(N)	How to perceive.
Thinking(T) - Feeling(F)	How to judge
Judging(J) - Perceiving(P)	Life style

4.3 Experiment Design

Twelve experiments for 12 groups were conducted, and each group consisted of 7 participants. Therefore, 84 subjects were solicited to participate in the experiments. Since one subject of thinking style was absent from the experiment, actually 83 subjects participated in the experiments. Men and women of each group were mixed in ratio of 4:3 or 5:2 considering the numbers of each sex's decision styles (see Table 2). However, participants were also almost equally mixed by two decision styles (thinking vs. feeling).

The subjects were sophomore and junior college students majoring in MIS in a university in Korea. All of them took 5 to 8 MIS courses and other business courses. The suitability of student subjects for the group decision research is well known and documented [Steeb and Johnson, 1981; Turoff and Hiltz, 1982; Lewis, 1982; Boje and Mumighan, 1982].

The 12 groups were randomly assigned to either GDSS site or no-GDSS (traditional meeting) site. Therefore, 6 groups were assigned to GDSS experiments and 6 groups to no-GDSS experiments. <Figure 3> summarizes the experiment design and the group mix for this study.

<Table 2> Decision Styles by Sex

	Thinking	Feeling	Total
Male	20	27	47
Female	19	17	36
Total	39	44	83

	GDSS	no-GDSS
Group Mix	6 Groups (feeling style: 20) (thinking style: 22)	6 Groups (feeling style: 24) (thinking style: 17)

<Figure 3> Experimental Design

4.4 Experimental Setting

Two different types of facilities were arranged for the GDSS site and the no-GDSS site respectively. For the GDSS-support meetings, 8 LAN-based PCs (1 PC for a facilitator and 7 PCs for participants) and an overhead projector with a public screen were equipped, and tables were laid in U-shape. Therefore the setting was a "decision room" that was designed to accommodate face-to-face group meetings. For the traditional (no-GDSS) group meetings, each group was provided with pencils, papers and a large white board. The tables were also laid in U-shape so that participants can face each other in close proximity (1.5 meters).

The GDSS software was GroupSystems V developed by Ventana Corporation. GroupSystems V offers three features that can help meetings be more efficient and productive: anonymity, simultaneous and parallel processing and full and immediate record keeping [Ventana Corporation, 1990-1992]. GroupSystems V consists of 12 menus (tools): electronic brainstorming, topic commenter, group outliner, idea organization, categorizer, vote, alternative evaluation, group matrix, questionnaire, group writer, policy formation and stakeholder identification. For the GDSS group meetings, electronic brainstorming, topic commenter, categorizer, vote and alternative evaluation were most often used.

4.5 Dependent Measures

Dependent variables were mainly perceived reactions of group members about decision-making sessions. The group member's perceptions were measured by the participants' self-report rating on i) satisfaction with decision outcome, ii) perceived goal achievement, iii) agreement with decision outcome, iv) satisfaction on decision process, iv) communication thoroughness, v) group familiarity, vi) degree of influence over other participants (influence-outward), vii) degree of influence from other participants (influence-inward) and viii) effort for achieving meeting goals.

The communication thoroughness is the degree to which participants express throughly what he/she would like to speak in the meeting. The influence-outward is the degree to which participants are perceived to be influenced by other members, and the influence-inward is the degree to which participants influence other members in the meeting.

These variables were measured in the post-test questionnaire using a seven-point Likert scale. The validity and reliability of the test items had been sufficiently examined and reported by Gallupe [1985], Gallupe and De-Sanctis [1988] and Jarvenpaa, Rao and Huber [1988].

4.6 Experimental Procedure

The following procedure was used for each of group meetings in this experiment:

a. Subjects were instructed what is allowed to do and what is not during and after each experiment.
b. Each subject was asked to briefly introduce themselves to be acquainted with other members.
c. Subjects were asked to fill out a pretest questionnaire that asked about attitudes towards computers and group decision making.
d. For the GDSS groups only, subjects had an opportunity to exercise the GDSS software before the experiment starts.
e. The researcher explained goals and steps of the meeting to the participants.
f. All groups were asked to follow a same general decision-making steps as follows:
   (1) Discuss major issues and/or topics relevant to the development of the MIS department.
   (2) Sort and select major issues and/or topics that need further brainstorming.
   (3) Brainstorm detail problems and solutions that can be implemented.
   (4) Rank and decide a list of top-ten solutions that are most important and urgent for the development of MIS department.

These steps placed some structure on the decision-making process, but the discussion was allowed to flow freely. All GDSS groups used 3 to 4 functions of GroupSystems V upon their consensus.

g. After each session, subjects were asked to fill out the post-test questionnaire that asked about the 9 dependent variables.

Each group was given a limited time for completing each step of group meetings. For example, 20 minutes were allowed for discussing and selecting major issues and topics, and 40 minutes for brainstorming detailed problems and solutions. But the time limit was not imposed to the stage of voting for final solutions. Most meetings lasted 100 to 120 minutes, and no-GDSS meetings usually took less time.

V. Results and Discussions

This section summarizes and interprets results of statistical analysis. For the statistical analysis, a fixed effect two-way analysis of variance was applied to all 9 dependent variables. <Table 3> shows ANOVA results (F-values) for testing the effects of GDSS support and members' decision style on 9 dependent variables. <Table 4> shows the means and standard deviations for each dependent variable.

5.1 Satisfaction on Decision Outcomes

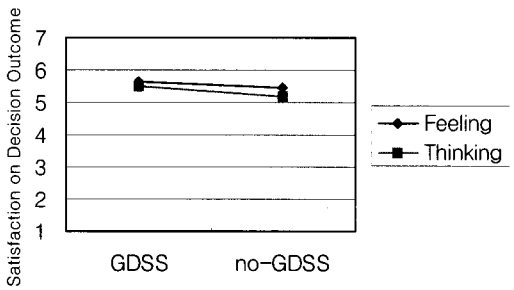
The analysis of variance for the satisfaction on decision outcomes (shown in <Table 3>) reveals no statistically significant interaction effect for the GDSS and decision style. Therefore, the hypothesis H1 is not supported at $p<.05$, and group members' satisfaction on decision outcome is not a function of individual's decision style and GDSS supports. However, <Table 4> shows that the use of GDSS tends to give higher satisfaction to both feeling and thinking groups. It is also worth to note that participants of thinking style show the lower level of satisfaction on decision outcomes, and overall the thinking people tend to be less satisfied with the decision outcomes than the feeling group (see <Figure 4>). Accor-

<Table 3> F-Values for Testing the Effects of GDSS Support and Decision Styles on 9 Dependent Variables

Dependent Variables	GDSS/No-GDSS	Decision Style	GDSS*Decision Style
Perception on Decision Outcome			
Satisfaction on Decision Outcome	1.89	1.33	0.12
Perceived Goal Achievement	3.83*	0.13	1.27
Agreement with Decision Outcome	0.34	0.14	0.39
Perception on Decision Process			
Satisfaction on Decision Process	4.04*	1.43	0.17
Communication Thoroughness	11.48**	0.08	5.81**
Group Familiarity	0.08	1.84	0.83
Degree of Influence -outward	3.61*	0.07	0.14
Degree of Influence -inward	0.08	1.56	0.39
Effort for Achieving Meeting Goals	13.25**	0.25	0.17

*significant at alpha < 0.05 **significant at alpha < 0.01

dingly, the satisfaction on decision outcomes of thinking group can be better improved as the GDSS is provided than the feeling style. Since individuals of thinking style are characterized by logical and analytical processing of information, they tend to better utilize the new technology, GDSS [Taggart and Robey, 1981].



<Figure 4> Effects on Satisfaction on Decision Outcome

5.2 Perceived Goal Achievement

The analysis of variance for the perceived goal achievement (shown in <Table 3>) reveals no statistically significant interaction effect for the GDSS and decision style. Therefore, the hypothesis H2 is not supported at $p<.05$. The perceived goal achievement is not a function of participant's decision style and GDSS support. However, the use of GDSS is somewhat related to the perceived goal achievement. This implies that the GDSS technology seems to function as a medium that can better motivate and guide participants to achieve meeting goals. These results are also related to the effort for achieving meeting goals that are also significantly

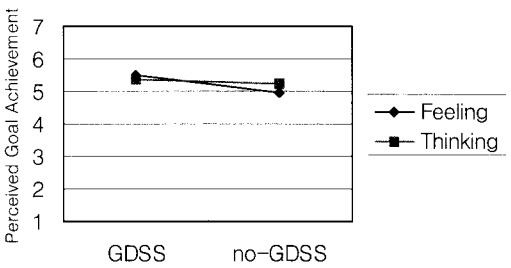
<Table 4> Means and Standard Deviations for the Perception on Decision Process and Outcome

Dependent Variables	GDSS				no-GDSS			
	Feeling		Thinking		Feeling		Thinking	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Perception on Decision Outcome								
Satisfaction on Decision Outcome	5.65	0.75	5.50	0.86	5.45	0.72	5.17	1.07
Perceived Goal Achievement	5.5	0.76	5.36	0.78	4.96	1.00	5.23	0.66
Agreement with Decision Outcome	5.45	0.94	5.63	0.66	5.46	0.83	5.41	0.94
Perception on Decision Process								
Satisfaction on Decision Process	5.25	1.16	5.04	1.00	4.83	1.24	4.41	1.33
Communication Thoroughness	5.30	1.17	5.95	1.00	5.00	1.74	4.18	1.47
Group Familiarity	4.10	1.12	3.90	0.92	4.33	1.37	3.82	1.19
Degree of Influence -outward	4.80	1.06	4.77	0.61	4.25	1.33	4.41	1.37
Degree of Influence -inward	5.05	0.94	4.91	1.02	5.13	0.90	4.71	1.21
Effort for Achieving Meeting Goals	6.00	0.86	5.73	1.08	4.79	1.67	4.76	1.60

Note. The highest point is 7, and the lowest point is 1.

affected by the GDSS support (see the dependent variable, effort for achieving meeting goals at <Table 3>). Members supported by the GDSS are more likely to exert to achieve the meeting goals than members without GDSS did (see efforts for achieving meeting goals at <Table 4>).

According to <Figure 5>, the perceived goal achievement of feeling style was slightly increased compared to thinking style as the GDSS is provided. Since the feeling group is characterized by enthusiastic and insightful tendency to become [Myers, 1962], they tend to be more optimistic about achieving meeting goals and expect more as the GDSS technology is provided.



<Figure 5> Effects on Perceived Goal Achievement

5.3 Agreement with Decision Outcomes

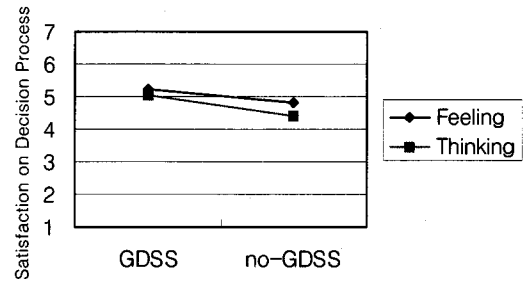
According to <Table 3>, the GDSS and decision style variables do not show statiscally significant interaction effects. Therefore, the hypothesis H3 is not supported at $p<.05$, and therefore, the effects of the GDSS is not a function of individual's decision style in terms of the agreement with decision outcomes.

<Table 4> shows that the support of GDSS does not affect the participants' consensus about the decision outcomes depending upon their decision styles.

5.4 Satisfaction on Decision Process

The analysis of variance for the satisfaction on decision process (shown in <Table 3>) reveals no statistically significant interaction effects for the GDSS and decision style variables. Therefore, the hypotheses H4 are not supported at $p<.05$, and the effect of the GDSS is not a function of the group characteristics in terms of the satisfaction on decision process. By the way, <Table 3> shows that the GDSS support is significantly related to participants' satisfaction on decision process at $p<0.05$.

According to <Table 4>, when the GDSS is provided, both groups of feeling and thinking shows higher satisfaction on decision process, but individuals of thinking style seem to be less satisfied with decision process than those of feeling style in both GDSS and traditional meetings. However, as <Figure 6> shows, when the GDSS is provided, the satisfaction on decision process of thinking style participants was more improved than feeling style participants do.

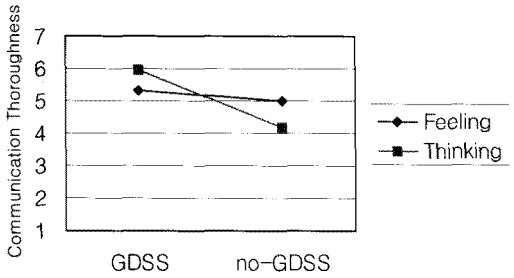


<Figure 6> Effects on Satisfaction on Decision Process

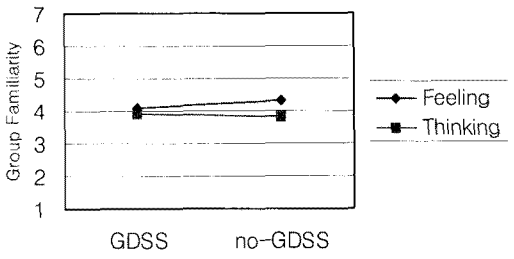
5.5 Communication Thoroughness

The analysis of variance for the communication thoroughness (shown in <Table 3>) reveals statistically significant interaction effects for the GDSS and decision style variables. Therefore, the hypotheses H5 are supported at $p<.01$, and therefore the effect of the GDSS can be a function of the decision style in regards of the communication thoroughness. That is, the effect of GDSS varies as a function of participants' decision style.

Besides, the support of GDSS is also significantly related to participants' perceived communication thoroughness at $p<.01$. The communication thoroughness of participants with GDSS is higher than those without GDSS according to <Table 4>. This finding is consistent with Jarvenpaa et al. [1988]: the GDSS technology significantly affected the number of thoughts captured on the notepads and the number of verbal remarks made. It is also interesting to note that the effect of GDSS is much greater for the participants of thinking style than those of feeling style (see <Figure 7>). This finding implies that the GDSS gives stronger impact on the communication thoroughness of thinking style participants than on the feeling style. This indicates that individuals of



<Figure 7> Effects on Communication Thoroughness



<Figure 8> Effects on Group Familiarity

thinking style tend to better utilize the GDSS technology to generate more ideas and opinion during the session. This finding is somewhat consistent with the Myer's conclusion that the ability of thinking style is better characterized by technical skills and development [Myers, 1976].

5.6 Group Familiarity

The analysis of variance for group familiarity (shown in <Table 3>) reveals no statistically significant interaction effect for the GDSS and decision style variables. Therefore, the hypotheses H5 are not supported at $p<.05$, and the effect of the GDSS is not a function of individual's decision style.

According to <Table 4>, participants of thinking style tend to show lower level of perceived group familiarity than those of feeling style. This finding implies that people of thinking style tend to feel less friendly toward other participants than those of feeling style do.

According to <Figure 8>, the friendliness perceived by the feeling people becomes lower under the GDSS environment. Since individuals of feeling style are characterized by personal warmth and understanding [Myers, 1976; Mitroff and Kilmann, 1976], they seem to show higher group familiarity in the traditional meetings, but lower at GDSS meetings. In other words, the feeling group tend to be much more concern about the emotional aspects of teamworks.

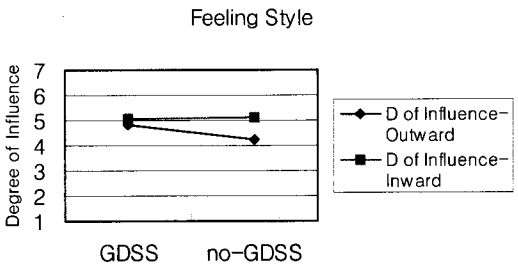
5.7 Degree of Influence

The analyses of variance for the degree of influence over other participants (influence-outward) and from other participants (influence-inward) (shown in <Table 3>) reveal no statistically significant interaction effect for the GDSS and decision style variables. Therefore, the hypotheses H7 and H8 are not supported at $p<.05$ respectively, and the effect of the GDSS is not a function of the decision style in terms of the degree of influence-outward and -inward. However, a significant relationship is found between the GDSS and the degree of influence over other group members (influence-outward). This finding is slightly different from those of Zigurs, Poole and DeSanctis [1988]. They found no significant difference between the total amount of influence behavior expressed in the GDSS groups versus traditional meeting groups.

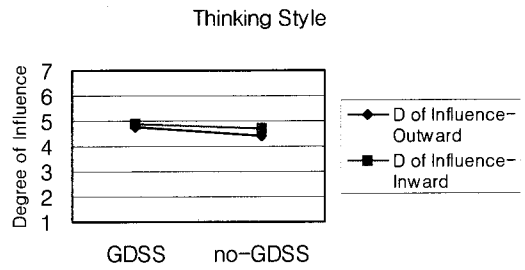
It is interesting to note that individuals of feeling style perceived higher degrees of influence from other participants (influence-inward) than

thinking style do, and especially individuals of feeling style without GDSS tend to be most strongly influenced by other participants. The feeling people think that they increased the influence over the other members as the GDSS support is provided (4.25 -> 4.80) (see <Table 4>). This contrast is shown evidently at the following <Figure 9a and 9b>. As the GDSS is provided, people of both styles increased the degree of influence over other members. This implies that since people can generate more ideas and opinion due to the parallel processing of the GDSS [Jessup, Connolly and Galegher, 1990], people of both styles think that they exercises more influence over other members under the GDSS environment. On the other hand, the feeling people tend to think that they had been less influenced by other group members as the GDSS is provided. Since the electronic meetings usually deprive mutual interactions and social cue [Myers, 1962], participants of feeling style characterized by personal warmth and understanding seems to be less influenced by other members under the GDSS environment. For both styles, the GDSS seems to function to narrow gaps between inward and outward influence.

These observations are contrary to a commonly accepted notion: since individuals in traditional meetings become more interactive each other and more often exposed to other member's tones of speaking and physical appearance and gesture, they tend to be more influenced by others. But it also can be argued that an individual's thinking can be more stimulated and influenced by the increased number of ideas and opinions that are generated in parallel and displayed in the GDSS environment.



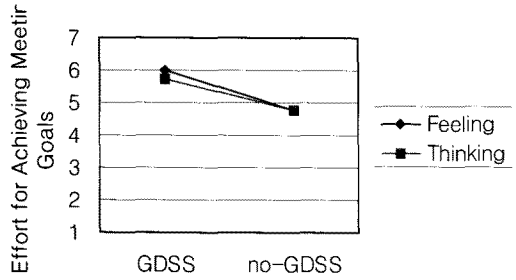
<Figure 9a> Effects on the Degree of Influence for Feeling Style



<Figure 9b> Effects on the Degree of Influence for Thinking Style

5.8 Effort for Achieving Meeting Goals

The analysis of variance for the effort for achieving meeting goals (shown in <Table 3>) reveals no statistically significant interaction effect for the GDSS and decision style variables. Therefore, the hypothesis H9 are not supported at $p<.05$, and the effect of the GDSS is not a function of the decision style in terms of the effort for achieving meeting goals. However, a significant relationship is found between the use of GDSS and the effort for achieving meeting goals that group members exerts. Specifically, participants with the GDSS perceives higher degree of effort for achieving meeting goals than those at the traditional meetings (see <Table 4>). This implies that participants assigned to the GDSS tend to exert higher degree of effort for achieving



<Figure 10> Effects on Effort for Achieving Meeting Goals

meeting goals. <Figure 10> shows that participants of feeling-style show slightly stronger impact of GDSS on their perceived effort for achieving meeting goals than the thinking-style do. This implies that the GDSS technology seems to push the feeling-style individuals to exert their more efforts for achieving the meeting goals than the thinking-style do.

Ⅵ. Conclusions

This study investigated how differently group members of two types of decision styles (feeling and thinking) perceive the processes and outcomes of the face-to-face meetings depending upon whether GDSS is provided or not.

We found that the effect of GDSS is a function of individual's decision style only in the communication thoroughness. Therefore, the decision style is a statistically significant factor that can mediate the effects of the group support technology in terms of communication thoroughness.

Specifically, the use of GDSS is positively related to the participants' perception about the satisfaction on decision process, perceived goal achievement, communication thoroughness, degree of influence-outward and effort for achieving meeting goals. This finding confirms that the benefits of GDSS widely claimed by researchers in the U.S., also can be obtained in domestic experiments in Korea [Steeb and Johnson, 1981; Jarvenpaa, Rao and Huber, 1988].

In summary, individuals of thinking style seems to expect more improvements from the new technology adopted and better utilize the GDSS technology. The slopes denoting improvement rates in the charts are slightly steeper for the thinking style than for the feeling style in the areas of satisfaction on decision outcomes, perceived goal achievement, satisfaction on decision process and communication thoroughness. According to Myers [1976], since people of thinking style tend to be much more concern about practical and matter of facts and to outperform in technical skills, they may expect more from and better use the new technology.

This research is the first attempt to specifically investigate the effects of group member characteristics, particularly decision style, on the meeting effectiveness according to whether GDSS is provided or not using Korean subjects. The interactive relationship between individual's decision style and the GDSS on the group processes shows another possibility of further detailed research about the group support technology. This work also can help us to customize the group support technology for different types of group members based on their unique decision style.

This research is not immune from drawbacks. First, despite of many dimensions of individual's decision styles, this research considered feeling and thinking styles only based on the MBTI. Therefore, it will be difficult to generalize the

findings to different decision styles derived from different measures. The second drawback is originated from the MBTI used to measure individual's personality traits. To the extent that the test suffers some construct validity, the findings of this research should be interpreted with a caution [Lanyon, 1997]. In this research, quantitative measures of group performances such as the number of creative ideas that have been often used in many GDSS research, are not included. Even though such quantitative variables seems not to be directly related to the decision style, the exclusion can be a minor drawback.

This research can be further expanded as follows. The MBTI test can capture three more personality preference indicators in addition to feeling and thinking indicators considered in this research. They are i) direction of energy (extroversion vs. introversion, ii) information processing style (sensing vs. intuition), and iii) life style (judging vs. perceiving). When the above three preference indicators can be selectively considered to describe group characteristics, their effects on users' perception about group process and outcomes depending upon whether GDSS is provided or not will be further investigated.

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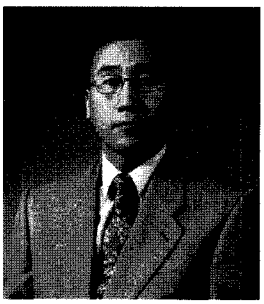
◆ 저자소개 ◆



최무진 (Choi, Moo-Jin)
저자는 고려대학교 경제학과를 졸업하고, 미국 Georgia State University에서 경영학 석사 및 박사학위를 취득하였다. 현재 계명대학교 경영학부 경영정보학전공 교수로 재직중이며 의사결정지원시스템, 정보시스템 운영과 정책 등을 가르치고 있다. 주요 연구관심분야는 DSS, GDSS, 정보윤리, 전자상거래이다.