The Impact of Importance and Distribution on Information Exchange in Team Decision Making: Preliminary Results

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Abstract

This research investigates the effects of information importance and distribution on its exchange in a synchronous distributed team environment. Data are being collected in laboratory studies where subjects interact through a computer-mediated decision support system. This paper presents the major research hypotheses, a theoretical framework for the study, describes the methodology, and presents preliminary results for two of the hypotheses. This research aims to make a significant contribution to understanding information exchange in teams.

Keywords: information exchange, group, distributed teams, decision support system

1. Introduction

An advantage of using groups in decision-making tasks is that they have access to a larger pool of expertise and knowledge (unshared information) than do individuals. However, prior research has shown that groups often do not effectively exchange and use the unique information available to some members in the team, leading to poor decisions [1]. This tendency has been called biased information sharing [1].

Numerous studies have explored information exchange in teams with a focus on how information is initially shared, referred to as information distribution among team members [e.g., 1, 2, 3, 5]. Dennis [2] defined information distribution as the possible ways that information may be available to all group members (shared information); to more than one but not all members (partially shared information); or to only one member (unshared information). This study adopts Dennis’s [2] definition of information distribution and investigates whether it impacts information exchange during group discussions.

Information exchange has been defined as the extent to which each team member makes a piece of information available for decision making in a group discussion [6, 7]. Information exchange has been shown to increase the pool of information to a group for making informed decisions [3]. The focus of investigation in this study is information exchange by mentioning a piece of information in the group discussion.

Information influence theory [8] holds that the importance of information may affect how information is processed for making decisions during team discussion. Steinel et al. [9] view a piece of information as important to the degree that it is relevant to the problem at hand. In the context of problem solving, importance of information can be referred to as its utility toward goal attainment. Utility of information for a decision is the essence of our definition, but we will use the more widely understood term “importance.” Importance of a piece of information is formally defined in this research in terms of its relevance to making an optimal decision. For example, a piece of information can be more important for making a decision (e.g., “relevant job experience of an applicant”), or it can be less important (e.g., “favorite color of an applicant”).

This study echoes Steinel et al.’s [9] argument that a piece of information has two characteristics that are especially relevant in the context of information exchange and team decision making, namely importance and distribution. The approach to distributing information and assessing importance in this study is novel compared to the general practice in prior information sampling studies.

The rest of the paper is presented as follows. The “information sampling” research paradigm is described, and the research question is presented, followed by a review of related literature to ground the research model and hypotheses. The research design and procedures are then briefly discussed. Finally, this paper concludes with the discussion of the current state of the study, a brief report of the preliminary results and a discussion of the anticipated contributions of the study.
2. The Information Sampling Paradigm

The information sampling paradigm is a key model in the information sharing literature that was developed to explain how groups share (exchange, in the terminology used in this study) information during discussions [1]. Research that follows this paradigm distributes pieces of information that may be relevant to a problem solution, to group members in a pattern such that some information is shared by all members before discussion, and some is not. The distribution is arranged such that no one group member has all of the information necessary to make an optimal decision; this is described as a “hidden profile” task. The traditional information sampling paradigm posits that the distribution of information, i.e., shared (information known by all team members) or unshared (information only known to a subgroup or individuals in the team) impacts information exchange during team discussions [1]. Other studies have proposed several possible explanations ranging from social motivation of team members [9] to the kind of task used for the experiments as factors that may explain the biased information exchange dynamics during team discussions [4].

The study described in this paper draws from a modified information sampling paradigm introduced by Steinel et al. [9], which was developed from a combination of the traditional information sampling paradigm with procedures from social dilemma research. The modified information sampling paradigm was developed to allow for the study of motivated processes in information exchange. There are four main limitations of Steinel et al.’s modified paradigm with regards to its effort to contribute to the understanding of the problem of solving hidden profile tasks. First, the methodology was designed such that participants knew what information is labeled as shared or unshared, important or unimportant. There was no actual information to be exchanged in the study. This study argues that this approach does not reflect real life situations where participants decide or discover the importance and distribution of information before and during team discussion. Secondly, since no actual information was exchanged, teams were randomly assigned a decision to mark the end of the experiment. This limits the assessment of decisions made in relation to the team strategy for exchanging information. Thirdly, unlike in this study, any information that was not shared among all team members before group discussion is labeled as “unshared,” even if, for instance, 3 out of 4 group members had it. Finally, although the focus of the paradigm was on investigating information pooling in terms of processes that motivate participants, it fails to assess decisions made as a result of the kind of pooling strategy employed by each team. With the aim of counteracting the limitations of both the traditional and modified information sampling paradigms, this research will lay the groundwork for assessing group effectiveness as it relates to the exchange of information during team discussions, leading to the research question of this study:

**RQ:** To what extent does the joint effect of information importance and distribution affect information exchange in a team discussion?

3. Literature Review

This section reviews selected studies that have been conducted to examine information exchange in team decision making. For example, Dennis [2] investigated teams solving a hidden profile task and found that teams that used GSS exchanged 50% more information than non-GSS teams, providing sufficient information to enable them to identify the optimal decision. However, only one of the GSS teams came to the optimal decision.

In a related study, Todd and Benbasat [4] conducted two experiments to investigate the extent of information use by unaided decision makers and users of a decision aid designed to support preferential choice problems. The results of the two experiments indicate that subjects with a decision aid did not use more information than those without one [4]. This finding contradicts the traditional assumption in the GSS literature that if decision makers are provided with expanded processing capabilities they will use them to analyze problems in more depth and, as a result, make better decisions [4]. A possible explanation for poor decisions made by teams with visual aids is inefficient information exchange [e.g., 4, 10].

Massey and Clapper [11] reported that although GSS teams contributed significantly more useful information—elements—during a brainstorming task than non-GSS teams, it was observed that most of the contributed information was not unique. These findings indicate that although the use of GSS can enhance efficient information exchange, more design research is needed to ensure that GSS will facilitate information exchange—a necessary condition for improving information exchange in a team environment. A suggestion for future research offered in Massey and Clapper’s [11] study is to seek to understand why team members choose to contribute or
share information during discussions. This study seeks to examine this phenomenon by capturing pre- and post-discussion assessment of information by team members.

A seminal study conducted by Stasser and Titus [1] found that groups often make suboptimal decisions on tasks structured as hidden profile. The study found that groups tend to discuss and incorporate into their decisions information that is shared (known to all group members) at the expense of information that is unshared (known to a single member of the group). Over the past two decades, this unsettling finding has stimulated much research that seeks answers to the questions such as: why and under what conditions will groups favor shared information over unshared information in their collective decisions? This section presents a review and critique of the literature on group information exchange that was initiated by the Stasser and Titus [1] study.

At least 35 studies that have used the information sampling paradigm, or a slight variation of it, have found a consistent result: groups seldom discover the hidden profile and they discuss more shared than unshared information (see Table 1 for a summary of these studies). In addition, not only is shared information more likely than unshared information to be mentioned initially, but members are more likely to repeat shared information than unshared information after it is mentioned. Wittenbaum et al. [12] provided a review of the group information-sharing literature, which was organized into seven types of factors that have been examined. This study modifies Wittenbaum et al.’s [12] organization of factors and groups them into four categories: human-related factors, information-related factors; task characteristics, and technology-related factors, as described below.

4. Research Model and Hypotheses

In the course of positioning this study in the extant information exchange literature, factors that may shape the solution of hidden profile tasks emerge and are grouped into four categories: information related [7, 13], human related [e.g., 14, 15], technology related [e.g., 2, 5, 16, 17], and task characteristics [18]. A description of how these factors may influence information exchange processes and the resulting team performance result in the proposal of a comprehensive framework of important factors that should be considered in the information exchange paradigm to explain group dynamics and behavior. This framework will contribute to our understanding of the possible factors that may influence information exchange processes as well as the outcome of the team performance. The full research study will instantiate the proposed framework shown in Figure 1 and guide the investigation of the impact of both information distribution and importance on information exchange and team performance during team discussions. However, this study only instantiates a limited scope of this framework by investigating the impact of both information distribution and importance on information exchange during team discussions. A process level approach is taken to investigate how participants assess importance of information both at the individual and the team level of analysis. This approach is taken to provide a clear understanding of the mechanics and sub-processes involved with processing information before and during discussions among decision making team members.

The full research model developed on the basis of the literature review has three main components: the four categories of factors that may impact information exchange processes, information exchange processes, and resulting team performance. Human-related factors are behavioral and social characteristics that shape how individuals interact with information such as pre-discussion preferences and opinions. Information-related factors are those that exist as a result of the distribution or other characteristics of the information. Characteristics such as importance of information may influence the amount of information that is exchanged in a social setting where behavioral factors might have a mediating effect on sharing as well. Technology-related factors refer to technology aids employed to exchange information. The ease of use of such technology enhanced information exchange may contribute to or frustrate effective exchange of information in a team setting [4]. Task-related factors that may affect information exchange include the type of task (i.e., intellective or judgmental) and the complexity of the group task [19, 20].

Information exchange processes consist of exchange behavior, perceived usefulness of the GSS, information use, and information foraging. Team performance will be assessed along two dimensions (exchange performance and decision quality) based on how well teams exchange information available to them to make effective decisions. The key dependent variable, exchange performance, will be measured by the extent to which information is shared, i.e., the amount of information shared relative to the amount of information available to the team members before discussion. Figure 1 shows the proposed full research framework and also the more limited scope of this part of the study reported here, which will only
include hypotheses or measures related to the shaded constructs in the full model. The remainder of this section synthesizes hypotheses supported by prior research to test expected relationships in the limited scope of the research framework.

4.1. Distribution and Importance of Information and Information Exchange

Reports from the classical information sampling paradigm [e.g., 1, 3, 9, 21, 22] suggest that participants will concentrate on exchanging shared information during team discussion. The information processing literature also suggests that the distribution of information and foraging behavior of team members may affect how and what information is exchanged for teams to make decisions [23, 24]. There is consistent evidence that a greater proportion of shared and partially shared rather than unshared information is exchanged during team discussions [25, 26]. This is explained based on Stasser et al.’s [1, 22] finding that team members tend to exchange pieces of information that are known to more than one member, leading to the first hypothesis:

**H1:** Teams will exchange more shared and partially shared information compared to unshared information.

The bias towards shared and partially shared information is mainly due to the fact that more participants hold shared information and also because participants are more likely to remember information mentioned in discussions repeatedly. Studies also show that repeated discussion of information might suggest importance of that information, whether or not it is indeed important [27-29]. Based on these findings it is hypothesized that teams will focus attention on the exchange and discussion of pieces of information that are considered more important rather than less important, leading to the second hypothesis:

**H2a:** Teams will exchange more information that is more important compared to information that is less important.

Although there is a plethora of extant research that shows that team members tend to exchange more shared information compared to partially shared and unshared information [e.g., 1, 3, 9, 21, 22], the dynamics of the exchange of information as it correlates with its importance is not well researched. Drawing from studies...
that show that repeated discussion of information might suggest importance of that information [27-29], we hypothesize that an interaction between distribution and the extent to which it is important will be significant. It is therefore hypothesized that teams will focus attention on the discussion of pieces of shared information that are considered more important rather than less important, leading to the third hypothesis:

**H2b:** There will be an interaction such that teams will exchange disproportionately more shared information that is more important, compared to shared information that is less important.

Importance of the pieces of information available to group members is rated by two sets of people: subject matter experts, and the members of the group. The expert ratings will be used as a control group in deciding whether a group exchanged “important” information and whether by the end, they had all the necessary information to make the correct decision in their hidden profile task.

5. Method

5.1. Participants

All participants so far are graduate students with an average working experience of at least 8 years. Participants are currently taking management classes in the School of Management at New Jersey Institute of Technology. They were assigned in a controlled form to 4-person teams based on their availability as well as considerations of balancing the team composition. For instance, participants from the same class were not assigned to the same group, and if possible, teams with only males or females were avoided. There have been 88 participants so far, in 22 groups. About 33% are above 30 years old and the rest are in the 21-30 years old range; 71% are male. Team members introduce themselves and then select who they want to be the team leader.

5.2. Tasks

The “hiring” and “firing” of IT personnel are the tasks developed for this research; in each case there are three candidates and pieces of information about each of these candidates. For the simpler “hiring” task (case 1), there are 8 pieces of information on each candidate (24 total pieces), and for the more complex “firing” task (case 2), there are 16 for each (48 total). Repeated measure is used, with each team working on the two tasks. Order of task is counterbalanced, i.e., each task is first or second for half of the teams (see Figure 2).

![Figure 2: Experimental design: the order of task (hiring or firing) is reversed for half of the group](image)

5.3. Method

A controlled laboratory experiment employing a 2 (participant’s information importance assessment: visible vs. invisible) by 2 (task complexity: more complex vs. simple) factorial design is being used to test the full set of hypotheses. For this paper, we are not analyzing the effects of task complexity and the GSS tool that controls whether importance ratings are or are not made visible to other group members before discussion. We are most interested in examining the impact of distribution and importance of information on its exchange during team discussions.

5.4. Procedure

Participants fill out a consent form at the beginning of the experiment; they are then trained on how to use the tools designed for the study by participating in a practice case very similar to the experimental tasks. Team members select the team coordinator after a brief introduction. Other positions in the team are randomly assigned to the rest of the team members. Participants are seated in four cubicles with a PC workstation such that they are unable to see or speak to other team members. Communication is done via instant messaging (Skype). Teams are told that they will participate in two tasks.

After the training task, participants are randomly assigned a first task, followed by a second task. In each task, there are two stages and three steps:
Stage 1, step 1: Participants worked independently to rate information characteristics as either more or less important.
Stage 1, step 2: Participants work as a team to rate information characteristics as either more or less important.
Stage 1, step 3: Participants re-rate information characteristics as either more or less important after team discussion.
Stage 2, step 1: Participants work independently to rank candidates based on characteristics of the candidates provided to each of them.
Stage 2, step 2: Participants work as a team to rank candidates based on characteristics of the candidates provided to each of them.
Stage 2, step 3: Participants re-rank candidates based on characteristics of the candidates provided to each of them after the team discussion.

At the end of each task, participants fill out a post-case questionnaire. At the end of both tasks, participants are required to fill out a post-experiment questionnaire. All the participants are debriefed at the end of the experiment and thanked for participating.

5.5. Coding

Conversation transcripts from team discussions are captured and logged for further analyses. An instrument was developed for identifying and classifying details on information items based on their importance and distribution. All information items mentioned during discussions are first identified; then they are classified as either more important or less important, and finally as whether they are partially shared, shared, or unshared. For example, in the sentence “...I think I prefer Amy as the first candidate because of her MIT degree and GPA...” There are two information items mentioned: MIT degree (more important, shared), and GPA (more important, unshared).

In order to assure reliability of the coding of type of information mentioned, the first author coded transcripts from two discussions. A trained coder then coded the same transcripts with Cohen’s Kappa of 0.82. Differences in the coding were discussed between the coder and the first author. Two more transcripts were coded and compared between the first author and the coder with Cohen’s Kappa of 0.97. The coder then continued to code the rest of the transcript. Thirteen groups were completed in time for the analysis presented below.

5.6. Construct Validation

Eight subject matter experts (SMEs) (5 males, 3 females) assessed reliability and validity of the initial set of tasks and ranked candidates based on all the information needed for each case. The experts were chosen based on their record in an Information Technology related capacity in which they served or are currently serving. The average experience of each subject matter expert in information technology related capacity is 14.5 years. The Cronbach’s Alpha, \( \alpha \) [30] statistic is used to determine agreement and consistency among the eight subject matter experts. The inter-rater reliability for the SMEs’ rating of information importance was found to be \( \alpha = 0.89 (p < 0.001) \), and the importance ratings neatly divided into half of the items being “more important” and half “less important” as intended.

There is also an outstanding level of agreement and consistency among SMEs in their ranking of candidates, suggesting that individuals are likely to agree when all the information required to make a decision is provided to them. In future analyses, we will compare this finding (the optimal decision) to that of teams in the experimental conditions where information provided to individuals is incomplete for making an optimal decision.

5.7. Independent Variables

Candidate information in the tasks is classified according to the distribution and importance of each piece of information. Thus the independent variables are information distribution, with three levels: unshared, partially shared, and shared information, and importance of information with two levels: more important and less important information.

Importance of each category of information was determined by expert judges’ ratings; the cutoff point was a rating of 4 in the 1 to 7 scale of importance, for “more important” vs. “less important” information. As shown in Table 1, the shaded rows are those categories of information that expert judges agreed to be more important.

Table 1: Expert ratings of importance of information characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education, School, Year of Graduation</td>
<td>4.88</td>
</tr>
<tr>
<td>GPA</td>
<td>4.25</td>
</tr>
<tr>
<td>Programming language</td>
<td>5.13</td>
</tr>
<tr>
<td>Last 2 positions held &amp; duration</td>
<td>5.00</td>
</tr>
<tr>
<td>Personality</td>
<td>3.87</td>
</tr>
<tr>
<td>Age</td>
<td>3.25</td>
</tr>
<tr>
<td>Community service</td>
<td>3.00</td>
</tr>
<tr>
<td>Extracurricular activities</td>
<td>2.88</td>
</tr>
</tbody>
</table>
Shared information is visible to all participants. Unshared information is visible only to one participant and partially shared information is visible to one or more, but not all participants. Participants are informed that the importance of the criteria had been judged in an earlier study. The characteristics received by each participant are as evenly distributed across the experimental categories as possible (more important unshared or partially shared, more important shared, less important unshared or partially shared, less important shared).

5.8. Dependent Variable

Information exchange is the dependent variable measured in this study. Counting how many characteristics are exchanged from each of the six categories (the numbers of important shared, important unshared, important partially shared, less important shared, less important unshared and, less important partially shared characteristics) will be used for scoring the exchange of information. Table 2 shows the classification of the pieces of information provided to each group before discussion. For example, for each experiment, there are 3 partially shared less important pieces of information available to be exchanged during discussion.

Table 2: Information by distribution and importance before discussion for each team

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Importance</th>
<th>Less</th>
<th>More</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partially</td>
<td></td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Shared</td>
<td></td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Unshared</td>
<td></td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

6. Results

As described above, the measure of information exchange used in this study is the amount of mentions of pieces of information during discussions.

6.1. Hypotheses

To test our hypotheses we performed univariate analysis, t-test and analysis of variance (ANOVA), nested by group for the 13 groups coded so far. Table 3 reports the means, standard deviations, and t-test statistical analyses of the measures.

Table 3: Means, Standard Deviations, and Results of Statistical Analyses

<table>
<thead>
<tr>
<th>Measures</th>
<th>Mean</th>
<th>Std.</th>
<th>t(df), pValue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partially shared Information</td>
<td>5.64</td>
<td>4.03</td>
<td>4.64(10), .009</td>
</tr>
<tr>
<td>Shared information</td>
<td>13.23</td>
<td>11.08</td>
<td>4.31(12), .0010</td>
</tr>
<tr>
<td>Unshared information</td>
<td>4.25</td>
<td>1.75</td>
<td>6.86(7), .002</td>
</tr>
<tr>
<td>More important information</td>
<td>16.08</td>
<td>13.68</td>
<td>4.24(12), .0012</td>
</tr>
<tr>
<td>Less important information</td>
<td>5.90</td>
<td>3.25</td>
<td>5.75(9), .0003</td>
</tr>
<tr>
<td>Shared more important information</td>
<td>10.00</td>
<td>9.34</td>
<td>3.86(12), .0023</td>
</tr>
<tr>
<td>Shared less important information</td>
<td>4.2</td>
<td>2.10</td>
<td>6.33(9), .0001</td>
</tr>
</tbody>
</table>

H1 states that teams will exchange more shared and partially shared information compared to unshared information. Table 3 shows that teams tend to exchange more shared (t(12)=4.31, p=0.0010) and partially shared (t(10)=4.64, p=0.009) information compared to unshared (t(7)=6.86, p=0.002) information. H1 is thus supported.

H2a predicts that more important information will be mentioned during team discussions than less important information. From Table 3 we see that more important information (t(12)=4.24, p=0.0012) is mentioned during team discussion than less important information (t(9)=5.75, p=0.0003).

Table 4: Frequency of information by distribution and importance

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Importance</th>
<th>Less</th>
<th>More</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partially</td>
<td>7 (13.649)</td>
<td>5</td>
<td></td>
<td>3.13%</td>
</tr>
<tr>
<td>Shared</td>
<td>2 (37.866)</td>
<td>30</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Unshared</td>
<td>4 (7.485)</td>
<td>26.515</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9 (2.01%)</td>
<td>7.99%</td>
<td>68</td>
<td>0.00%</td>
</tr>
</tbody>
</table>
We further explore the joint effect of importance and distribution of information on its exchange. Table 4 presents results of the joint classification of the pieces of information exchanged.

H2b posits that there will be an interaction such that teams will exchange more shared information that is more important, compared to shared information that is less important. The results in Table 3 and Figure 3 suggests that teams exchange more shared more important information ($t(12)=3.86, p=0.0023$) compared to shared less important information ($t(9)=6.33, p=0.0001$) during discussions. However, the only way to disentangle direct effects and interaction effects is with ANOVA.

Table 5: Team-level Analysis of Variance

<table>
<thead>
<tr>
<th>Variable</th>
<th>df</th>
<th>Anova SS</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>imp</td>
<td>1</td>
<td>36.442</td>
<td>1.56</td>
<td>0.2129</td>
</tr>
<tr>
<td>dist</td>
<td>2</td>
<td>170.134</td>
<td>7.28</td>
<td>0.0008</td>
</tr>
<tr>
<td>imp*dist</td>
<td>1</td>
<td>331.221</td>
<td>14.17</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

*imp-importance; dist-distribution

Table 5 presents the ANOVA results for the team-level measures. There was no significant main effect for importance ($F(1, 13) = 1.56, p = 0.2129$). However, there was a significant main effect for distribution ($F(2, 12) = 7.28, p = 0.0008$), and the interaction between importance and distribution ($F(1,13) = 14.17, p = 0.0002$). H2b is therefore supported.

7. Discussion, Limitations and Conclusions

The objective of this paper was to examine how the importance and distribution of information impacts information exchange during group discussions. The research model used in this study was grounded in the information sampling paradigm [1, 22] and information influence theory [7, 13]. Previous research found teams that use group support systems during discussions focus more on shared than unshared information [2]. This experiment reports similar findings. Based on coding of the first 13 transcripts of discussion by groups performing the simpler of the two tasks, we found that information exchanged among team members is motivated by the importance of that information as well as its distribution. This is a major contribution to the information sampling paradigm as it provides additional explanation to the dynamics of information exchange during team discussions.

There are several limitations to this research. The most important is that this is a preliminary analysis: results could change when the full set of groups (planned to be 25 or more) is completed and coded for both tasks. Secondly, as a laboratory experiment using student subjects who had not previously worked together as a team, the generalizability to organizational teams is unknown. There may be contextual factors (e.g., social and political factors) that could affect how information exchange occurs in teams, which may result in different findings from those presented in this paper.

Nevertheless, there are several implications for future research. First, predictions from prior information sampling theories held only for the distribution of shared and unshared information. This study includes a third distribution dimension—partially shared information—and shows that it is significantly relevant to the exchange dynamics during discussions. New theories of information sampling need to consider how partially shared information may impact team performance.

Prior research focused mainly on the dynamics of the distribution of information that impacts its exchange. Our findings suggest that additional research is needed to investigate and understand various ways importance of the information being exchanged among team members can be dynamically elicited and integrated into team discussions. It has been speculated that the importance of information may influence how it is exchanged during team discussions [7, 13]. This study provides empirical evidence for the correlation of importance to its exchange during team discussions. We call on researchers to test this theory in other application domains.

We have not yet analyzed the effects of the visibility of importance ratings before discussion. However, a preliminary analysis of the data indicates that this display may actually cut down on discussion. More research is
needed on how to structure a group support tool to make the relative importance of various pieces of information more salient as a topic of discussion.

Although this research found that participants exchanged more of the information that was considered important, we are yet to uncover the reason why unshared information is not effectively exchanged during discussion, even when the person or persons who have those pieces of information have rated them as important. Additional work is needed to examine strategies to stimulate the exchange of unshared information during team discussions.

There are also some implications for practice. Application designers can leverage findings from this study to support group decision making by providing a mechanism for decision makers to assess the importance or relevance of discussion points in the decision making process. This approach may create transparency and encourage team members to exchange information that they consider to be relevant to the discussion.

This study has several implications for project managers that hope to encourage their teams to exchange and use information in organizational problem solving. Organization project team members are often selected based on the unique expertise and information they are believed to contribute to the team. It is believed that by exchanging this unique (unshared) information, the team will make optimal decisions [2]. This study however suggests differently: participants exchanged only a small portion of their unique information. More interestingly, participants exchanged more of the unshared information that was considered to be important. Thus, one implication for managers is that improving information exchange is an important initial step in improving organizational decision making.

Another implication is, thus, to structure group meetings to provide sufficient opportunity for participants to assess, discuss and agree on the importance of every piece of available information before they must begin the decision making process.

This study suffers from the usual limitations of laboratory experiments [31]. For instance, we are unable to examine the influence of uncertainty associated with the information possessed by participants on how they exchange it. The literature suggests that such variables might be important; hence our results should be interpreted as partial until complementary experiments and analyses noted above have been completed. Also as noted in section 5, we place this paper in the context of a preliminary study and plan to examine other factors in the research framework through follow-on work.

8. References


[23] Osatuyi, B., and Mendonça, D., "Impact of Time Constraint on Collaborative Information Foraging During the Response to a Simulated Emergency", in (Editor, 'ed.'^'eds.'): Book Impact of Time Constraint on Collaborative Information Foraging During the Response to a Simulated Emergency, ACM, Savannah, GA, 2010


