A Field Study of Partially Distributed Group Support

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Abstract
This paper reports on a field study of several partially distributed groups working in an insurance company. Data were collected via interviews, a questionnaire, and meeting observation. The data support parts of several theories including media richness and social information processing, and also reveal other constructs which are not found in current theories. Two of these are convenience and social support. Subjects in this study expressed a perception that the two constructs were important, lacking, or both.

1. Introduction

Today’s organizations deal with the economic pressure to increase productivity, efficiency, and profitability. As part of the organizational changes implemented to successfully meet this challenge, some companies restructure their businesses in such a way that the role of groups and teamwork assumes greater significance [4]. Team projects often include people of different geographical origin, ethnicity, culture, job title, and organizational functions. Furthermore, as organizations become distributed across multiple sites, team members are commonly geographically separated from one another.

Group diversity and distance may create barriers that possibly lead to group process losses, including increased time for decision making, difficulty in communication, and reduced participation in the group process [1]. Technologies such as group support systems, video conferencing, telephone conferencing, and others have been developed to help eliminate some of these communication barriers.

Research on work-related communication among team members has mostly investigated groups performing either in the same-time same-place mode, i.e. all participants were together in the same place, or in the same-time different-place mode, that is, where two or more participants were not in the same place. These two meeting settings are only a small representation of modern organizational environments. Very often, meetings take place in a partially-distributed situation with only one or a few distributed participants, while the majority meet together [21].

In a recent study [22], 44% of the teams investigated had exclusively local membership, 9% had purely distributed membership, and in the remaining teams, one or more of the team members were outside the respondent’s site. Although specific data are not yet available, partially distributed groups are arguably becoming more common in modern organizational settings, in part due to the spreading of telecommuting.

Partially distributed groups are a uniquely challenging subject for scholarly study because they possess characteristics of both distributed and non-distributed groups. For example, the absence or presence of visual (non-verbal) communication depends on whether the remote person or the rest of the group are considered.

This paper describes the findings of a study conducted on several partially distributed groups operating at an insurance company. The company has a policy of encouraging telecommuting. One result of this policy is that many team projects include at least one participant who works from a remote location. In the majority of cases these employees are telecommuters working from their homes on a full time basis.

A questionnaire and on–site interviews were used to collect information and experiences from the respondents. The aim of this preliminary investigation was to find out two things: 1) which are the most common difficulties and advantages encountered in partially distributed groups, particularly by the remote participants, and 2) whether the technology available is sufficient to meet their requirements or improvements are necessary.

2. Literature Review

To provide a foundation for this study, and to discover possible predictions and explanations of the findings, several theories were considered. Generally the theories can be categorized as having to do with communication and media choice. They are briefly introduced in the following paragraphs.
2.1 Media-Use Theories

The Media Richness and the Social Presence theories emphasize the different capacity of media to overcome communication constraints, to transmit multiple cues, and to reduce ambiguity in the information process [29]. The two theories have been grouped under the term Cues-Filtered-Out Theory [8].

Another set of theories, including Social Information Processing, Adaptive Structuration, Social Influence model, Social Learning and, the most recent, Critical Social Theory, are characterized by their strong social connotation, and have been denominated Social Definition Theories [24]. These theories predict that media-use is mainly influenced by social forces present in real-life organizations.

Cues-Filtered-Out and Social Definition theories have generally been considered as conflicting. The first are considered as a rational explanation of media-choice, whereas the second are regarded as strongly influenced by social forces. Recently, however, it has been argued that to better understand media-choices it is important to regard the two types of theories as complementary and not conflicting [35, 5, 38]. Individually, each of these theories has contributed to descriptions and predictions in research on group work.

2.1.1 Social Presence. Social Presence theory indicates that the presence of participants is perceivable mainly by means of the medium used to communicate. During the communication process, several activities such as exchange of information, decision-making, and problem solving may take place. Each communication medium affects these activities differently based on its capacity to convey more or less social presence to the participants [34].

Individuals with media awareness can enhance communication exchange or work performance by choosing the most appropriate media available [31, 30].

2.1.2 Media Richness. In terms of Information Richness theory, the more the medium presents the criteria of multiple cues, immediacy of feedback, language variety, and personal focus, the richer that medium is considered [9, 10]. Decreasing the level of ambiguity in a message is the essential goal directing media choice. Face-to-face communication is considered the most suitable medium among high-performing managers as far as ambiguity reduction is concerned. This medium typically reduces communication ambiguity for its capacity of immediate feedback, multiple cue types, and natural language [36]. Other studies have shown that maintaining or increasing the message ambiguity was actually leading to higher consensus and effective achievement of strategic goals in organizational settings ([33] p. 491).

Since Media Richness theory formulation, new media such as electronic mail, voice mail, and group decision support system, have been made available to organizations. Media Richness theory has given mixed results in empirical studies where new media have been utilized. In the mentioned studies, e-mail which was supposed to be a lean medium according to the Information Richness Theory has showed unpredicted high media richness [23, 24]. These results have provided a more interpretative perspective to the media choice, showing that fundamental to the understanding of information is not only the objectivity and the physical transport of the message through effective channels, but also the mutual capacity of the sender and the receiver to reach and understand each other.

2.2 Social Definition Theories

If for Media Richness theory objectivity and rationality are the essential elements in the choice of media, Social Definition theories, on the other hand, rely on social forces to explain individual media choice. This collection of theories represent an effort to combine the broader theory of social effects on attitudes and behaviors to media use in organizations.

Social Information Processing Theory

Members of an organization can be positively or negatively influenced in their communication technology choice by their co-workers’ media selection and use [37, 7, 14, 20]. The way coworkers exercise social influence is by open statements about characteristics of media or tasks features that individuals assimilate into their own evaluations [32].

2.2.1 Social influence model of media use. Social influence rather than information ambiguity-reducing criteria has been considered by some as the main factor responsible for media choice [12]. The social influence model predicts variations in media perceptions by individuals from real-life organizations. Such variations will not be random but will systematically be linked to differences in social context and experience. Because of subjective and socially constructed variations, media lose their intrinsic objectivity and users perceive them as lean or rich in relation to the influencing social factors [13].

2.2.2 Social learning theory. Another social influence contributing to media choice is vicarious learning. The Social Learning Theory of Bandura [2] stresses the
importance of observing and modeling the behaviors, attitudes, and emotional reactions of others: "Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action." (p. 22).

In observing the effective or negative outcome of someone else's choice, individuals may be led to either repeat or avoid the same experience [3].

2.2.3 Adaptive structuration theory. The adaptive structuration approach provides a dynamic view of the interaction between technology and individuals' behavior during the communication process. According to the adaptive structuration perspective, people can creatively redefine the functionality of a medium to achieve their goals despite obstacles in the technological environment [28, 11]. The wide range of emoticons available to electronic communication is a good example of the adaptive process acting to overcome some of this medium's traditional constraints [6].

The focus of adaptive structuration theory is on the adaptation process, and it is implicit to the theory that the use of the media will change and evolve as time passes. Social information processing theory is the theory predicting how and why the changes will happen [6].

2.2.4 Critical social theory. Until recently, the majority of studies on communication richness of electronic media focused on either one of the basic approaches: the positivist (represented by the Information Richness Theory), and the interpretivist approach (represented by the Social Definition Theories). The positivist perspective applied to social sciences has many similarities with the natural-science approach. Both models use experimental designs with independent and dependent variables. The interpretivist approach, on the other hand, refutes the positivistic perspective with its rational and objective view and gives substantial credit to the social environment surrounding the communication process. The interpretative approach recognizes the existence and importance of "mutual understanding of what another person means" [23].

Critical Social Theory in IS research departs from both the positivistic and interpretative approaches and gives an original explanation to communication richness.

Specificially, the critical social theory of Habermas [15, 16, 17], has provided a strong framework for a communication theory that has already several differences from the two previous approaches. As Ngwenyama states: "Unlike the positivist perspective of IRT, CST views people not as passive receptacles of whatever data or information that is transported to them, but as intelligent actors who assess the truthfulness, completeness, sincerity and contextuality of the messages they receive. For this reason, we agree with and will use the CST terms, human actor and organizational actor, when we refer to what positivist IS research refers to as 'users' and 'human subjects.' Finally, unlike most interpretive approach (e.g., [23]), the CST perspective requires the researcher to attend not only to the matter of mutual understanding, but also the matter of the emancipation of organizational actors from false or unwarranted beliefs, assumptions, and constraints" (p. 151.)

Good interpretations of the critical social theory applied to IS theory can be found in [27, 25, 18, 26].

3. Method

The nature of field studies is that they are inherently messy and therefore difficult. When a researcher leaves the controlled atmosphere of the laboratory, the ability to identify causality or even correlation among variables is hampered by the sheer number of possible confounding variables found in the "real" world. Yet there are often compelling reasons for undertaking the venture, despite the difficulty. In the case of this study, one of the primary reasons for going into the field was, as mentioned earlier, the nature of partially distributed teams. Partial distribution of teams creates a unit of analysis replete with contradictions: The group is neither fully distributed nor fully together; previously developed measurement scales are appropriate either for individual or group characteristics but become problematic when comparing a remote individual with the remaining team members as a group; statistical analysis is awkward because the number of "group" participants far exceeds the number of remote participants. Perhaps because of these difficulties, little empirical work has been done to investigate partially distributed groups. Also because of the difficulties
mentioned, and because of the dearth of information specifically regarding partially distributed groups, we concluded that a field study be an appropriate means of obtaining information.

In choosing an organization for this study, random selection was not an option because of the requirement for a specific type of work group. Contacts persons representing several different organizations were questioned regarding a) the presence or absence of partially distributed groups in their organization, and b) the willingness of group members to participate in the study. A large insurance company, headquartered in the Western United States was found to meet the necessary criteria.

Three researchers collected data during a series of meetings at company headquarters. The meetings included: observing a team meeting involving a manager, local team members and one remote team member who participated via an audio (telephone) link; and informal interviews with managers, co-workers, and remote workers. Additionally, a questionnaire, covering topics discussed in the informal interviews was distributed to members of the team whose meeting we observed. Some details about each part of the data collection effort are given in the next paragraphs.

3.1 Team Meeting

As team members gathered in the conference room for their weekly meeting, there was plenty of social interaction, including exchanges of work-related information and personal information. For example, “Did you get that document I sent you?” and “When is so-and-so going to move into her new house?” Once all were assembled, a team member dialed the speaker phone and the remote member “joined” the meeting. At this point the team members around the table each took a moment to greet the remote person individually, looking at, and speaking to the loudspeaker on the table as if it were the remote person herself. The meeting progressed as any normal business meeting. Each team member participated to one degree or another, offering information, asking questions, etc. One member gave a presentation which included drawing a diagram on the whiteboard. As preparation for the meeting, this team member had made an electronic version of his diagram and stored it on the network server where the remote member was able to access and view it. Thus all members of the team were able to view the diagram during the presentation. Another team member had prepared a handout but no mention was made about whether the remote person had received this handout in advance.

3.2 Informal Interviews

Informal interviews were conducted with five remote members of four different teams, three managers, and three non-remote team members. While there were individual differences of opinion on a few topics, for the most part there was consensus on the following issues.

- Telecommuting is very beneficial, remote workers are able to accomplish more, get fewer distractions, and are quite happy communicating with co-workers, managers, and customers via technology.

- Knowing the job and knowing one’s co-workers are prerequisites to successful telecommuting. Thus, occasional face-to-face meetings are necessary. (Remote team members meet face-to-face with their teams with frequency ranging from once per week to twice per year.)

- Telephone conferencing technology is sufficient for meetings, E-mail, fax, and VTAM (mainframe messaging program) are sufficient for other communication. Video conferencing is not needed. Additional technology such as NetMeeting™ would be nice, but is not necessary.

- Remote team members feel a continuing need to prove themselves to co-workers, managers, and customers. Perhaps related to this is need is the recognition by remote team members of dependence on their co-workers’ and managers’ cooperation.

Managers and co-workers were generally in concordance with the opinions of the remote participants, as determined by their responses during the interviews and by the responses of those who filled out the questionnaire.

4. Findings

Observations and interviews revealed some interesting things about partially distributed groups at the insurance company:

First, meetings are only a small part of partially distributed group work. While this observation may seem like a statement of the obvious, we feel it is worth
mentioning, because of its implications for supporting group work. Non-meeting support is as important as meeting support. Non-meeting support includes at least three things: 1) Willingness on the part of co-workers and clients to send work off-site; 2) Willingness on the part of co-workers and managers to do “overhead” work for the remote member; and 3) A “safety net,” possibly consisting of a co-worker who ensures that the remote member is “kept in the loop.”

Although there was consensus, among all the participants we interviewed, that telecommuters are able to get more work done than their counterparts at headquarters, getting the work to the remote location is apparently not always the most convenient way of handling the work. Group members, other co-workers, and customers are frequently tempted to bring work to the most convenient team member (someone physically nearby) rather than the most appropriate person. This creates extra work for those team members who must then go out of their way to forward the work to their remote counterparts, or simply do the task themselves. Additionally, remote workers need the cooperation of their peers in headquarters for various small tasks such as retrieving printouts from the mainframe computer, obtaining signatures, etc. While such tasks taken individually may not seem important, their cumulative effect can be perceived as non-trivial.

Second, remote members feel a constant need to prove themselves to managers, to co-workers, and to clients. Reasons include:

- because telecommuting is a privilege,
- because group composition (including the manager position) changes frequently
- because manager’s support is essential to individual and group success
- because co-worker co-operation is essential to individual and group success
- because clients’ trust is essential to individual and group success

The need to prove oneself motivates the telecommuters to actively seek opportunities to add value (e.g., taking advantage of time zone differences.) Another observation related to the remote members’ perceived need to prove themselves is that remote members miss (meaning not only that they do not receive, but also that they feel a need for) opportunities such as those for leadership and training.

Third, socializing is missed (same meaning as above) even by remote members who do not particularly like to socialize. As noted during the team meeting, much in the way of important work-related exchanges takes place in informal or social settings (e.g., before and after official meeting time.) Also, much of the communication that takes place during a typical day at the office would not be considered official business communication. However, many times it is through office socializing that informal team building takes place and relationships are built/strengthened. Although this type of communication may not be officially mandated or sanctioned, it is nevertheless an important element of teamwork.

Another important aspect of socializing is the “out of sight: out of mind” phenomenon. The remote workers in this study apparently felt keenly the need to make themselves and their work known to managers and others. This seemed to be the result of a fear (probably justifiable) of being forgotten or ignored because of the geographic distance which separates the remote workers from their teams.

These findings lead to the belief that although communication technologies (E-mail, VTAM, telephone) are helpful, they are not sufficient to meet the perceived need in the area of social and informal communication.

Fourth, minimal technology is sufficient for process satisfaction, and the major criterion for media choice is convenience. While the relationship-building aspect of communication may be perceived as lacking sufficient technological support, the opposite is true of job-related or task-oriented communication. All participants were satisfied with speaker-phone technology for meetings, except for:

- Lack of visuals, e.g., when someone uses the whiteboard.
- Difficulty hearing persons who speak softly
- Difficulty hearing when more than one person speaks at the same time

Remote members agreed that they have to develop a “skill” (or perhaps a comfort level) for successful meeting participation. This includes overcoming the natural tendency to remain silent, and a willingness to interrupt, interject, etc. somewhat aggressively. The natural tendency to listen quietly seems to be a common human trait in partially distributed group settings. The willingness to interrupt ongoing conversations may be a matter of personality, which would be beyond the scope of this study. When asked about the criteria for choosing one communication medium over the others, all subjects responded to the effect that the medium of choice is the one that transmits the necessary content with the least amount of effort or expense.

Although satisfaction with present communication technology was a point of strong agreement among all participants, some did express their desire for the ability to share applications (as in NetMeeting™, for example.) This apparent contradiction may be explained...
by noting that their apparent satisfaction with existing technology is strong but not absolute. Their opinion about additional software was expressed in terms like “would be nice” rather than “can’t live without.”

During meetings, team members at headquarters gather in a conference room, away from their offices, but the remote participants, remain at their desk (at home) which allows them access to their computer during the meeting. This is perceived as an advantage for the remote person. The remote member's ability to access his/her computer during meetings gives him/her an advantage that helps to overcome some of the disadvantages mentioned earlier (e.g., inability to see the whiteboard in a meeting.)

Fifth, remote members enjoy several benefits/advantages by virtue of their not being physically present (some of the following are specifically characteristic of telecommuting; some may be applicable to all partially distributed groups):

- Having fewer distractions leads to more productivity.
- Geographical distance makes it easier to maintain emotional distance. That is, remote participants perceived themselves as less likely to get caught up in arguments.
- Remote members enjoy a more flexible schedule than their counterparts at headquarters. Since their office and their work is at home, they can work when inspiration strikes, even if it is “after hours.”
- Because they do not go to a separate room for meetings, remote participants enjoy certain advantages during meetings. They may look up files, send messages, etc. without waiting until the meeting has ended.
- Because remote participants are invisible during meetings, they can do other things if bored. This may include work-related tasks, home-related tasks (e.g., tidy up the room,) or playing solitaire on the computer.

Finally, remote team members suffer some disadvantages:

- They can’t see visual aids, documents, etc, unless previously arranged.
- Professional opportunities (promotion, leadership, training) are limited at best.
- Some telecommuters expressed a sense of guilt for imposing on others for support. While there were some who did not express a sense of guilt (or debt,) they all acknowledged that their own success was dependent on the cooperation of the co-workers and managers.
- Lack of access to facilities (e.g., mainframe printer) was a common complaint among the remote participants. While most had modem access to a LAN server at headquarters, only some had links to the company mainframe.
- All of the remote participants acknowledged they have only very limited ability to build relationships. While some professed to prefer not socializing with their co-workers, all admitted that geographic separation hampered their ability to develop relationships with co-workers, managers, and customers. They also admitted that such relationships are important, most notably because of the needed cooperation mentioned above.

5. Discussion

This study did not include as part of its purpose the gathering of empirical data by which to support or refute existing theories. Rather, through observation and by asking questions we hoped to gain understanding of how a real organization supports partially distributed groups. Existing theories provide a starting point from which to interpret observations.

5.1 Media choice

Although information richness has been supported by some laboratory studies as a basis for media choice, we found that the richness of media was, at best, a secondary consideration for the subjects in this study. Given the needs, expressed by the remote participants, to prove themselves, make themselves “visible,” acquire information usually obtained through social interaction, etc., it might be expected that social presence theories would best explain media choice. However, we found that the overriding criterion for media choice was convenience. As the literature we reviewed concerning media choice made little mention of convenience as a determinant of media preference, we suggest this is an area ripe for further investigation and documentation. The theory that comes closest to the mark in this regard might be adaptive structuration.

5.2 The Way We Work

Much of the information we have about collaboration, communication, and group work focuses on “getting the job done.” Media and technologies are evaluated with respect to their ability to support the task.
We found this task orientation prevalent in our subjects' responses as well. By probing specifically for information about the social aspect of work, we found something lacking for the remote participants. The lack of opportunity for relationship building and other social or informal communication is not a weakness in the technology or media used. Certainly the telephone is capable of supporting social interaction (ask any parent with a teenager!) E-mail, facsimile, and other communication technologies are likewise capable. The problem, then, is not in the technology itself but rather in the way the technology is used. For example, when one employee telephones another, there may be an attitude that since the call is made on company equipment and on company time, the conversation must be restricted to verifiably "company" business. This may be particularly true if long distance charges apply. Many organizations have written and published policies mandating that telephones, E-mail, etc., are to be used only for company business. In a world without distributed groups such policies make perfect sense, but in the case of remote employees, an exception may be in order. Depending on the importance placed on social interaction and relationship building, some organizations may find it better to encourage more informal and casual conversation over their communication media. While other team members have ample opportunity to socialize face-to-face before and after meetings, in the hallway, at lunch, between cubicles, etc., the remote employee misses these opportunities.

A related issue to consider is the importance placed on social relationships. This may be affected by culture, at the country, organization, or individual level. For example, much of European and North American culture can be characterized by the saying, "business before pleasure." However, other cultures, including much of Asia and Latin America place priority on building relationships, i.e., developing trust, before conducting business. In a similar way, organizational cultures may vary, just as individual preferences may vary. There may also be job characteristics which make social interaction more or less desirable.

Because existing media can support social interaction as well as task-oriented interaction, we do not see that the lack of social interaction in partially distributed groups justifies a call for revolutionary improvements in technology. Rather, we might predict that policies and practices regarding appropriate use of technology may evolve to reflect the social need. That is, as culture (national, corporate or other) mandates, individuals and organizations may change their use of technology from strictly work-related communication to conversations that include more social and informal components. Further study of this issue may allow prediction of greater or lesser success with distributed group work based on culture.

6. Conclusion

Based on this study, we believe that two major factors influence distributed group support which have not received adequate coverage in the literature. The first, convenience, has an important impact on media choice. The second, social interaction, has implications for the way individuals and teams use technology to support job-related tasks and other communication which is perhaps only indirectly related to the job. Figure 1 shows graphically how these factors may fit into the distributed group communication picture. First, group support is essentially communication, represented by the two-headed arrow. Theories of media choice and social presence explain part of the phenomenon. We note that work related communication may include both task-oriented and social communication, and that the relative importance of each type of communication may be greater or lesser (represented by the diagonal line) depending on cultural expectations. Various technologies enable communications of varying qualities (also informed by existing theories) and the main criterion for choosing among the technologies is convenience.

Figure 1 Factors impacting distributed group support
6.1 Limitations

Because this was a field study, there was no control of variables, no random selection, and no statistical analysis. This means correlation and causality cannot be established. Of course, that was not the purpose of this study. However, there are problems with field studies of this nature when one attempts to draw general conclusions. Since all the data for this study came from one organization there may be aspects that are unique to this organization. Thus, all conclusions must be taken as conjecture until further studies can corroborate. Further, after additional field work justifies the formulation of theoretical propositions, laboratory experiments will be necessary to prove hypotheses. For now, however, this study succeeds only in bringing up some interesting questions.

References


