December 2002

An In-Depth Investigation of Communication Mode Choices in Distributed Teams

Mary Watson-Manheim
University of Illinois at Chicago

France Belanger
Virginia Polytechnic Institute and State University

Follow this and additional works at: http://aisel.aisnet.org/icis2002

Recommended Citation
http://aisel.aisnet.org/icis2002/91

This material is brought to you by the International Conference on Information Systems (ICIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICIS 2002 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
AN IN-DEPTH INVESTIGATION OF COMMUNICATION MODE CHOICES IN DISTRIBUTED TEAMS

Mary Beth Watson-Manheim
Information & Decision Sciences
University of Illinois at Chicago
Chicago, IL USA
mbwm@uic.edu

France Bélanger
Pamplin College of Business
Virginia Polytechnic Institute and State University
Blacksburg, VA USA
belanger@vt.edu

Abstract

Advances in information technologies facilitate new organizational forms and new ways of structuring work, such as the use of distributed teams. In distributed environments, individuals have many choices of communication modes for use with colleagues. Previous research has primarily addressed the need for richness of a medium to “fit” the characteristics of the communication task being performed. There has been little research on when and how different communication technologies are used in the performance of specific communication-based work processes (e.g., information gathering, relationship development). Using an interpretive case study approach, and guided by a hermeneutic perspective, texts from interviews of 40 individuals working in distributed teams in two organizations were analyzed. Analysis was conducted in three stages: (1) key patterns of meanings expressed by each employee, (2) key patterns of meaning that emerge across organizations, and (3) broader conceptual and managerial implications from the analysis. Some initial individual patterns include the relationship between media choice and the specific communication-based work process performed, and the influence of the type of team structure in which the communication-based work process is embedded on the choice. Findings at all stages of analysis will be discussed.

1 INTRODUCTION

Advances in information technologies facilitate new ways of structuring work. Workers typically have access to multiple communication technologies, and use these to work at a variety of locations with both distributed and collocated colleagues. As the number of communication modes explodes and the use of communication technologies becomes more integrated into the work process, the management of the ensuing multiple relationships and the performance of communication-based work activities becomes complicated. The objective of this research is to develop an in-depth understanding of the ways in which different communication modes can be used to effectively support communication-based work processes in partially or completely distributed teams.

2 BACKGROUND AND QUESTIONS

Distributed work involves settings where employees are physically and/or temporally separated from their co-workers or their work location some or all of the time (Bélanger et al. 2001). Communication is the essential backbone behind distributed work (DeSanctis and Monge 1999), and it is greatly affected by this environment (Bélanger et al. 2001; Fritz et al. 1998). In “virtual offices,” problems can occur due to infrequent face-to-face communications, the high mobility of workers, and the lean communication media available (electronic mail) (Davenport 1996). For example, since nonverbal communication is often
nonexistent for remote workers, their acquisition of tacit knowledge and experience-based learning are weakened (Raghuram 1996).

Communication between individuals provides the basis for performing a number of different work activities. New knowledge is created as individuals exchange and combine knowledge through mechanisms such as meetings and telephone conversations (Nonaka 1994). Communication between individuals is necessary for the efficient coordination of work activities (Barry and Crant 2000; Kraut and Streeter 1995). Relationships between individuals in organizations are developed and maintained through communication incidents (Barry and Crant 2000; Gaborro 1990). These relationships are important for job satisfaction, but also provide a basis for efficiently performing work activities (Barry and Crant 2000).

Prior studies investigating adoption of technologies to support distributed work (Gupta et al. 1995; Tung and Turban 1996) found basic technologies such as telephone, faxes, e-mail, screen sharing, and desktop videoconferencing remain the most used technologies. Research on communication in virtual work has usually examined the use of e-mail, telephone, and face-to-face modes (e.g., Wiesenfeld et al. 1999). However, employees today have a increasing variety of communication media choices (Table 1). Which communication media do individuals use and find useful in a distributed environment, and under what circumstances? How do they use these technologies to perform communication-based work processes?

Table 1. Communication Modes in Distributed Work

<table>
<thead>
<tr>
<th>Asynchronous Communication</th>
<th>Synchronous Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic mail</td>
<td>Videotext</td>
</tr>
<tr>
<td>Fax</td>
<td>Intelligent/mobile phones</td>
</tr>
<tr>
<td>Listservs</td>
<td>Chat/Multi-user Domains</td>
</tr>
<tr>
<td>Newsgroups/threaded discussions</td>
<td>Telephone</td>
</tr>
<tr>
<td>File transfers</td>
<td>Face-to-face meetings</td>
</tr>
<tr>
<td>Bulletin boards</td>
<td>Teleconferencing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Asynchronous Coordination</th>
<th>Synchronous Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project tracking software</td>
<td>Videophones</td>
</tr>
<tr>
<td>Calendaring tools</td>
<td>Electronic whiteboards</td>
</tr>
<tr>
<td>Personal digital assistants</td>
<td>Shared applications</td>
</tr>
</tbody>
</table>

| Shared databases                  | Groupware/Intranet                | Conferencing |

Media choice has most often been investigated from a task contingency approach. Media richness theory was proposed to explain the relative richness of different communication media in supporting interactions between individuals (Daft and Lengel 1986). Each medium is said to have some interactive communication properties that make it better (or worse) at supporting certain types of communication between individuals. Other research indicates that the choice of media is influenced by the number of users, i.e., a critical mass of users is needed to provide adequate benefit for new users to use the medium (Markus 1990).

Differing from these rational approaches, social influence theories suggest that participants construct the meaning and use of specific media. Therefore, the same medium may be considered rich or lean depending on situational factors, e.g., norms and rules for interaction within a particular work environment (Fulk and Steinfeld 1990). Individual perceptions and interpretations of the media, and contextual factors (e.g., prior relationships), have more salient influence on choice in many circumstances than specific characteristics of the media channel (Carlson and Davis 1998; Lee 1994).

In summary, this research has primarily addressed the need for richness of a medium to “fit” the characteristics of the communication task being performed. Little research on electronic media and organizations has addressed when and how different communication technologies are used in the performance of specific communication-based work processes.

Consequently, our research was guided by these questions:
• How does the performance of specific communication-based work processes influence the choice of communication modes?
• What additional factors influence the choice of different communication modes to perform communication-based work processes?
• Does the interaction between choice of mode and the performance of the communication-based work process lead to a successful outcome?

3 METHODOLOGY

Given our focus on conducting an in-depth investigation of communication technology uses in organizational settings, we chose an interpretive case study approach (Orlikowski and Baroudi 1991; Yin 1994).

3.1 Sample

Our research questions guided our sampling choice for the study. To conduct case studies, we wanted to have settings with enough similar characteristics between organizations to have some comparable properties (Miles and Huberman 1994; Yin 1994). Our research setting was the sales divisions of two Fortune 100 companies in the information technology industry. The divisions included multiple managerial teams that cooperated in some fashion to attain divisional objectives. The extent to which individuals worked remotely differed between the companies, as did other organizational factors. We interviewed 20 participants per site, representing approximately 25 percent of the employees in each division (Table 2).

**Firm A.** The service division that we studied was divided into two functional areas: sales and technical. On the sales side, account representatives identify, create, and cultivate new service opportunities, as well as attend to dedicated accounts. The account representative brings a technical specialist to a project as needed. The technical specialist educates the client on the technology. Internally, the technical specialist is charged with advising and educating employees in the division on new technology developments. The consultant is also technically oriented and works closely with the client to provide post-sales services. Firm A recently created “hoteling” workspace for consultants and account representatives. Technical specialists are assigned dedicated office space, but may work at home when appropriate.

**Firm B.** The divisional unit studied at Firm B was dedicated to one very large customer. The division was responsible for selling technology products and for product performance, including maintenance and service in case of product failure. Service managers are responsible for reacting to customer concerns/emergencies. Product specialists identify new service opportunities for their products, and sell the product. Client managers work closely with service managers on technological issues, and identify opportunities for additional products/services needed at the client site. Off-site services (located throughout the United States) execute outsourced services for the division’s customer and other customers of Firm B. Client managers and service managers have dedicated offices primarily at the customer location. Product specialists are at a separate location in the same region. Firm B is supportive of work at home, and some employees take advantage of this.

<table>
<thead>
<tr>
<th>Table 2. Demographics of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total in Division</td>
</tr>
<tr>
<td>Total Interviewed</td>
</tr>
<tr>
<td>Females</td>
</tr>
<tr>
<td>Males</td>
</tr>
<tr>
<td>Professionals/Employees</td>
</tr>
<tr>
<td>Managers</td>
</tr>
</tbody>
</table>
3.2 Data Collection

As recommended by Myers (1997), our primary data sources were semi-structured interviews with managers and professionals within these organizations. Supporting documents collected include physical layout, organizational charts, job descriptions, policy manuals, and publicly available data. We also observed the work setting. For confidentiality purposes, participants were not asked to provide personal information. We, therefore, obtained only name, job title, gender (observed), and job and company tenure. The taped interviews lasted 50 minutes on average. They were transcribed verbatim into text files.

3.3 Data Analysis

Analysis is on-going and iterative in nature (Figure 1). We developed coding categories, templates, and coding procedures based on Miles and Huberman, and with guidance from a hermeneutics approach. Our unit of analysis was the individual within the team. We did not measure team level variables, only individual perceptions of effectiveness.

Hermeneutics. Fundamental to hermeneutic interpretation is the hermeneutic circle, which implies that understanding of text is derived from iterations between the whole document and the interrelationships between parts of the document (Klein and Myers 1999). The text to be analyzed can be generated from transcripts of interviews, as often found in marketing (Thompson 1997), and other disciplines, e.g., nursing (Geanellos 1999). The hermeneutic perspective provides an appropriate framework to investigate and explicate tacit knowledge embedded in work practices (Geanellos 2000).

Hermeneutic interpretation has been previously used to investigate the use of alternative communication media and the richness associated with the messages generated (Boland 1991; Lee 1994).

Lee concludes his study with the following: “The best or an appropriate medium for a particular communication transaction would not be identified or selected by an individual manager through an exercise of rational decision making, but would emerge as best or appropriate over the course of its interactions with its many users.” The knowledge of how and when media are used is then embedded in the work practices of individuals.

Thompson suggests that “long” interviews are particularly well-suited to hermeneutic analysis. We adapted our interpretation of the respondents’ narratives from Thompson’s interpretation of consumer interviews. In our interviews, respondents were asked to describe their experiences in various teams in which they were members, with particular emphasis placed on their use of communication technologies for communication-based tasks, while identifying other factors such as incentives, training, or culture that may affect the use and effectiveness of the technologies. There were three steps to our analysis:

1. Discern key patterns of meanings expressed by each employee in their narratives of communication and media use in the different teams
2. Identify key patterns of meaning that emerge across the narratives expressed by different employees in different organizations
3. Derive broader conceptual and managerial implications from the analysis

![Figure 1. Iterative Process](image-url)
4 PRELIMINARY RESULTS

A number of themes are emerging from the analysis of the data. Key individual patterns identified in the first step of the analysis include the validation that there is a clear relationship between media choice and the specific communication-based work process performed. The most commonly discussed processes in the study were information gathering, information sharing and management, coordination, relationship development, and conflict resolution. Often it appears that the choice of communication mode is influenced by the type of team structure in which the communication-based work process is embedded. For example, in their work unit, the dominant work process individuals identified was knowledge sharing. This process is accomplished with specific modes (e.g., meetings, listservs, etc.) often dictated by the norms of the group. However, when the same individuals perform work within their virtual or project team, they use different modes for the same process, partly due to the distribution of some members, and partly due to the relationships involved.

One of the most obvious patterns emerging in the cross-organizational comparison is that communication mode choices are greatly affected by cultural characteristics (e.g., organizational culture, perceptions regarding technologies, etc.). For example, in Firm A, technology is seen as a timesaver and legitimate tool to use to get the work done, while in Firm B, it is often seen as a menace and burden. Conversely, in Firm A, individuals seemed to choose certain communication modes based on organizational norms, while in Firm B, choices were more closely related to their personal preferences.

Finally, examples of overall patterns deduced from individual and comparison patterns include the need for communication mode choices to fit specific communication-based work processes, and the overall effects of organizational culture, team structures, and incentive structures on this relationship.

5 CONCLUSION AND EXPECTED CONTRIBUTIONS

At the conference, additional findings including a research framework depicting the broader conceptual relationships between the constructs of interest will be presented. This model will contribute to an increased understanding of technology support for communication-based work processes in distributed team environments, and provide a foundation for future research. Based on the proposed framework, research propositions will be presented. This research will highlight the importance of considering: (1) the particular communication-based work processes when investigating communication mode choices, as well as the types of teams of which individuals are members, (2) the role that these factors have in influencing the communication practices of individuals, and (3) the resulting impacts of these factors on successful outcomes in distributed work settings.

6 REFERENCES


Myers, M. D. “Qualitative Research in Information Systems,” MISQ Discovery, 1997 (available online at http://www.misq.org/misqd961/isworld).


