
The relationship between electronic and face-to-face communication and its implication for alternative workplace strategies

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Abstract

Many individuals who have no or limited experience of using electronic communication technologies (ECTs), e.g. telephone, fax, voice, and e-mail are concerned that media like e-mail are a limited, if not poor, way of communicating, and that they cannot replace face-to-face communication. Reports on research examining how relatively sophisticated ECT users use ECTs to communicate, and how electronic communication may affect face-to-face communication. Finds that ECTs are most effective in the administrative stages of a project rather than in the initial conceptualizing stages or final project wrap up and is the primary form of communication between co-workers. Discusses the implications for workplace strategies that involve remote work.

Introduction

Ernst & Young call it an "office hotel" programme and reportedly save \$40 million per year. Arthur Andersen uses "just-in-time" offices at a reported saving of \$25 million per year. Dun & Bradstreet is implementing a "telecommuting-and-sharing" programme and anticipates a saving of \$30 million per year[1]. With these and other impressive cost benefits, new workplace strategies, including remote work and unassigned offices (where the individual employee does not have a personally assigned office or workstation), are becoming more commonplace throughout organizations.

Yet with all the cost benefits, what actually happens to the people working in these alternative offices? How is teamwork really affected by remote communication as opposed to face-to-face communication?

The "remote" characteristic of working within alternative offices relies to a large extent on electronic communication technologies (ECTs), (e.g. telephone, fax, voice and e-mail) to allow the work process to continue uninterrupted despite the separation of employees from one another.

The premiss that ECTs can replace face-to-face communication and contact is not universally accepted. It has stimulated considerable research looking at how ECTs affect communication patterns.

This study explores the role which ECTs play in helping people who work remotely to get and share work-related information easily, efficiently, and in a timely manner. Specifically the study asks how employees at a multinational computer company use ECTs (e.g. telephone, fax, e-mail, etc.) in their work and how it influences the nature of the work-related face-to-face communication which they have within the organization.

Research questions

Although research has been conducted examining how e-mail and other types of ECTs differ from face-to-face communication, research has not focused on the effect on workplace communication over the whole range of ECTs as the primary form of communication within an organization.

Three main questions along with several sub-questions guided the research into the

role of ECTs in maintaining work-related communication.

- (1) Are there specific tasks or project stages for which ECTs work especially well?
- (2) Are there limits/barriers to the successful use of ECTs for workplace communication?
- (3) What is the relationship between electronic and face-to-face communication?

Subjects

The total survey sample of 2,642 was taken from a multinational computer company based in the Silicon Valley area of California (referred to as the participant organization). The final survey sample group was generalizable to the original sample for age and gender. The focus group had a total sample of 1,000 taken from the participant organization. The final focus group size was greatly reduced from the total sample. Both final sample groups contained a variety of job types, work experience, and ages as well as gender.

Are there specific tasks or project stages for which ECT works especially well?

It appears that not only are ECTs necessary for collaboration with employees at different work sites, but they can also be more efficient than face-to-face communication in some instances. Over 90 per cent of respondents felt that they were able to get technical information quickly from co-workers using ECTs (see

Figure 1). On a scale of 1 to 5 (1 being strongly agree, 5 being strongly disagree) the mean was 1.75 (standard deviation was 0.77).

Subjects also appeared to be comfortable with the speed with which they could get help in solving work-related problems using ECTs (see Figure 2). Nearly 90 per cent agreed that they could get helpful feedback in a timely fashion using a combination of ECTs. On a scale of 1 to 5 (1 being strongly agree, 5 being strongly disagree) the mean was 1.76 (standard deviation was 0.86).

One comment is particularly illustrative of the majority response:

Where else can someone ask several thousand engineers a question worldwide in one single message sent from an individual's workstation? Only those knowledgeable and willing to answer do so, the others are "bothered" with a few seconds of interruption and delete the message...

Eighty per cent disagreed with the statement, "I feel uncomfortable using ECTs to ask for assistance on work I am doing", including 58 per cent who strongly disagreed (see Figure 3). One comment illustrates how strongly some of the subjects felt about the effectiveness of ECTs: "I use electronic communications almost exclusively – if it is not available electronically, I will reconsider my need". On a scale of 1 to 5 (1 being strongly agree, 5 being strongly disagree) the mean was 4.14 (standard deviation was 1.29).

Subjects seemed comfortable asking questions using ECTs and felt that they received

Figure 1 "I am able to get technical information I need quickly from co-workers using a combination of ECTs"

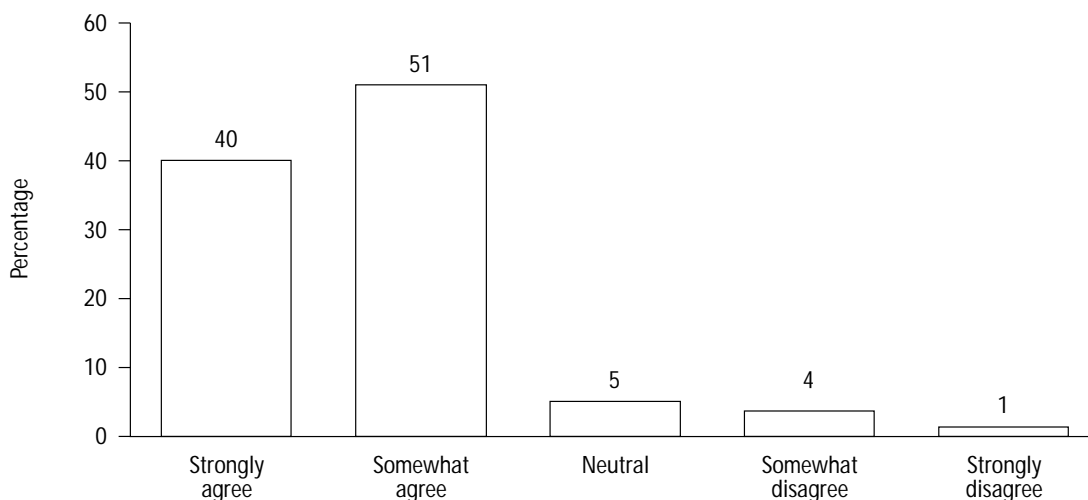


Figure 2 “For solving work-related problems, I can get helpful feedback in a timely fashion using some combination of ECTs”

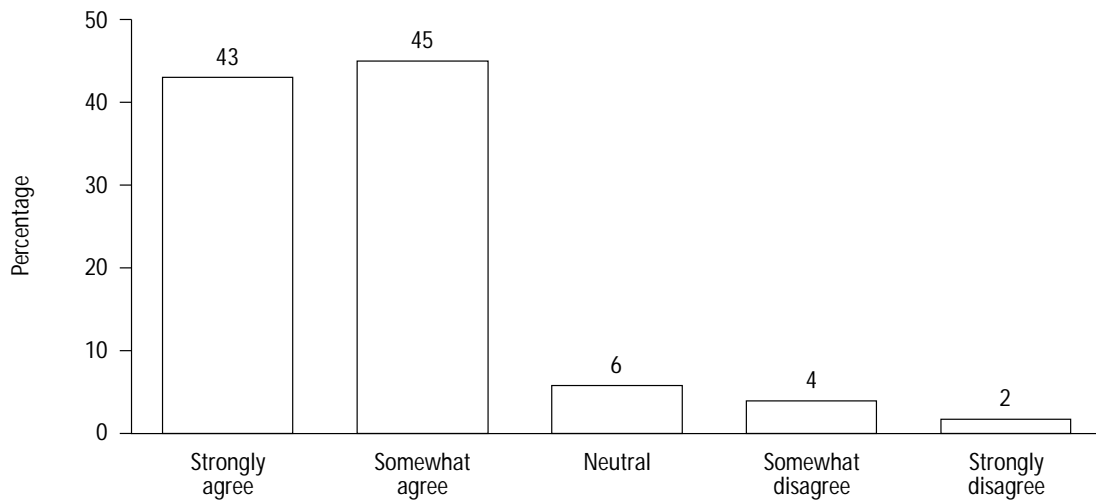
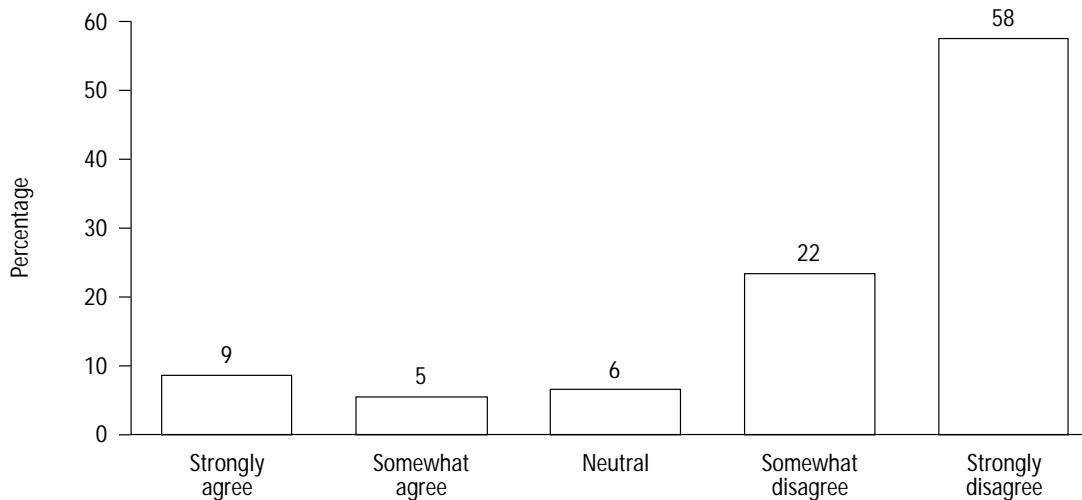


Figure 3 “I feel uncomfortable using ECTs to ask for assistance on work I am doing”



timely responses on technical and work-related problems. However, were they more likely to offer work-related feedback to a co-worker using ECTs or in a face-to-face meeting? The response was mixed on this issue with the greatest percentage (34 per cent) of respondents choosing the “neutral” response category (see Figure 4).

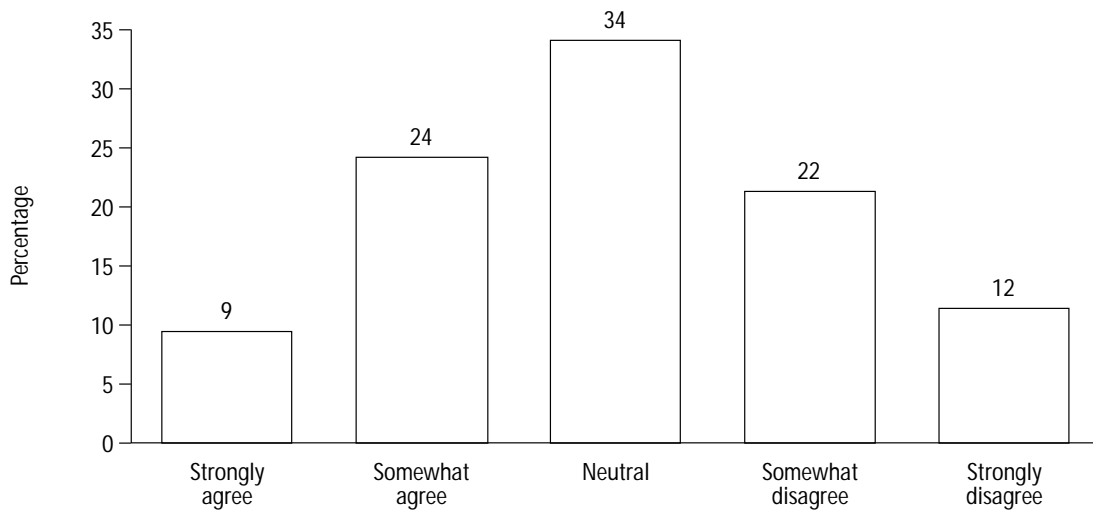
The rest of the subjects were split almost equally between using ECTs and using a face-to-face meeting for providing feedback. On a scale of 1 to 5 (1 being strongly agree, 5 being strongly disagree) the mean was 3.04 (stan-

dard deviation was 1.13). The statistical analysis suggested a significant difference between levels of work experience and likelihood of offering feedback via ECTs rather than face to face.

In general it would seem that the less experienced a person is, the more likely they are to offer work-related feedback via ECTs. However, the reasons for this effect were unclear from the subjects’ comments.

The different characteristics of communication using ECTs versus a face-to-face meeting were further investigated by examining

Figure 4 "I am more likely to offer work-related feedback to a co-worker using ECTs than I am in a face-to-face meeting"



whether subjects felt that a specific medium was better for certain aspects of their work. Subjects were asked for their agreement with the statement: "Electronic communication technologies are not very good for brainstorming about new ideas". There was no general agreement regarding this issue (see Figure 5). An almost equal percentage agreed that ECTs were not good for brainstorming as disagreed. On a scale of 1 to 5 (1 being strongly agree, 5 being strongly disagree) the mean was 2.97 (standard deviation was 1.30).

Although there was no agreement on the issue of the usefulness of ECTs for brainstorming tasks, the subjects' comments indi-

cate that most could see benefits to their use. However, many also had strong reservations about brainstorming using ECTs. It appears likely that the preferred method of communication would depend on the goal of the brainstorming session.

The different characteristics of communication using ECTs versus a face-to-face meeting were also investigated by examining which particular stages of a project could be completed especially well using one particular ECT, namely e-mail. In general, most subjects seemed to feel that e-mail was especially useful during the middle project stages, including: technical and administrative imple-

Figure 5 ECTs are not very good for brainstorming

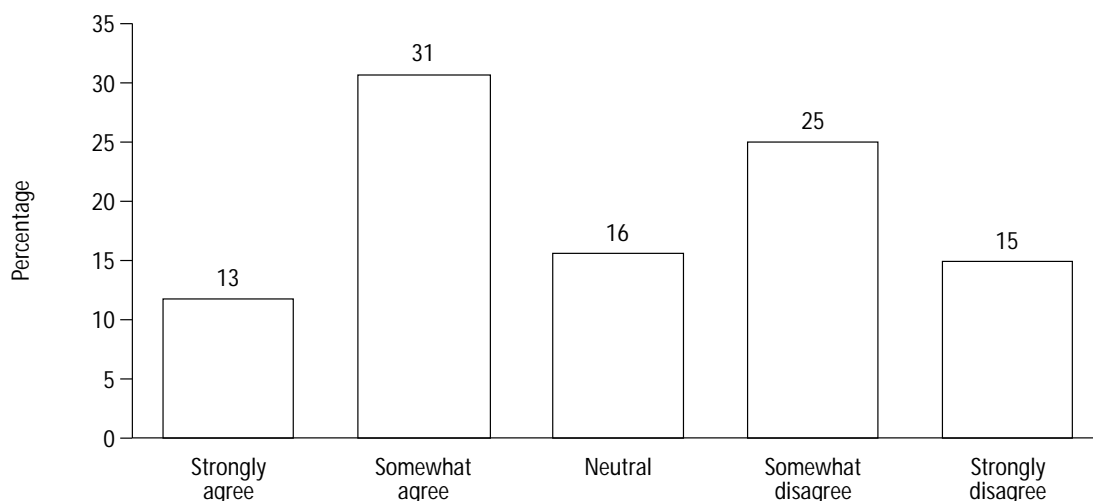
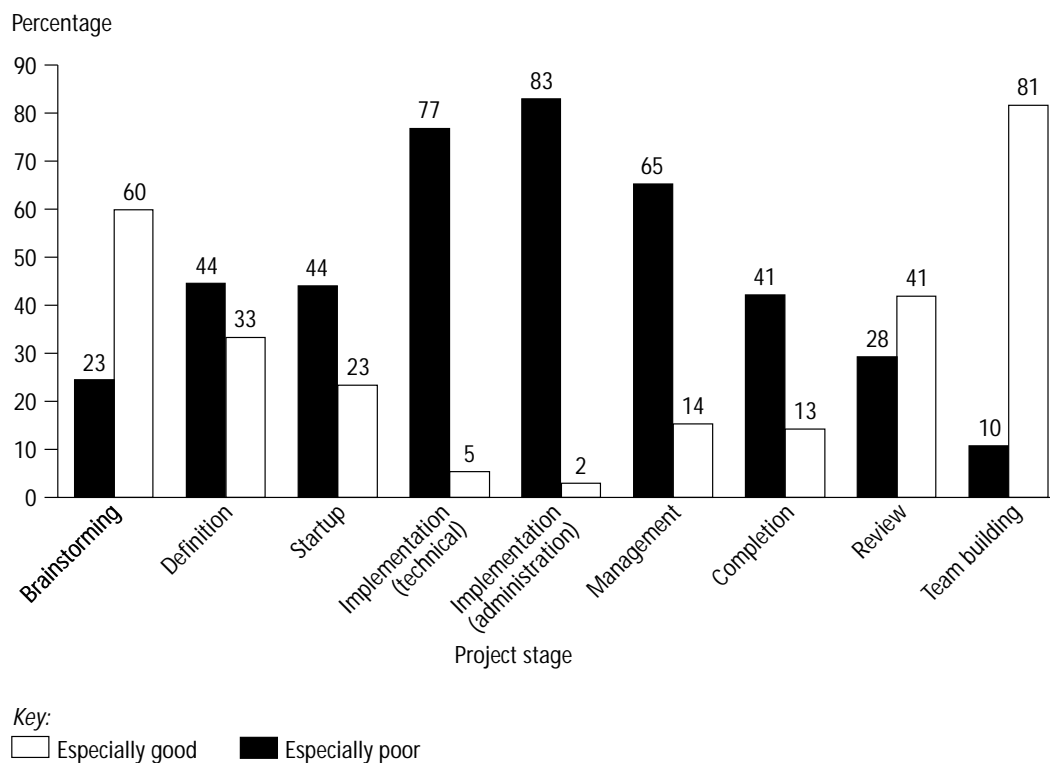


Figure 6 Project stages for which e-mail is especially good or poor



mentation tasks and project management (see Figure 6).

Just slightly more than 40 per cent felt e-mail was useful for project definition, start-up and completion. About 25 per cent felt that e-mail was good for brainstorming and project review and only 10 per cent felt it was good for team building. One comment reflects these overall findings well:

For the first three [brainstorming, definition, and startup] e-mail *must* be mixed with face-to-face. For the next four [technical and administrative implementation, management, and completion] which are primarily bureaucratic in intention, e-mail alone is *best*... The last two [review and team building] are highly interactive (like number one, brainstorming) and *need* face-to-face. Here the best role for e-mail is circulating minutes or drafts.

Most subjects seemed to agree that e-mail was especially useful for technical and administrative implementations and also for project management. Assessments of its usefulness were mixed for all other stages. However, many commented that e-mail is actually useful throughout the process and its usefulness is tied more to the particular communication need than to the particular project stage.

There seemed to be numerous factors that influenced subjects choosing a particular communication medium for a given task. Sometimes it was the type of feedback that dictated medium choice and other times it had more to do with factors related to the medium or a personal preference for electronic versus face-to-face contact. Hence, for the current study it would seem that medium choice is dependent on the specific circumstances surrounding the communication message.

Are there limits/barriers to the successful use of ECTs for workplace communication?

Subjects were asked what usually prompted a face-to-face meeting between themselves and one or more co-workers who they regularly communicated with via ECTs? A content analysis of the open-ended responses to this question in addition to a review of subjects responses to all the questions revealed that the most limiting aspect of electronic communication was related to the lack of richness it provides (see Table I).

Table I Content analysis of responses to what prompts a face-to-face meeting between subjects who regularly communicate with each other via ECTs?

Content analysis category	Number of responses
Need the high band width of face to face	235
Need instant feedback of face to face (avoid miscommunication, get a quicker decision)	164
Need for people to attend or to be involved	55
Conflict resolution and sensitive/contentious issues	49
When face to face is quicker than ECTs, i.e. proximity (walk down the corridor)	37
Interpersonal factors are important	21
Bumping into someone	13
If there are technical problems or security concerns	12
Large amount of information to pass	9
Private and not easily forwardable messages needed	6

The high bandwidth provided by face-to-face communication made it much easier for subjects to communicate complicated issues. For example, face-to-face communication was necessary when:

something is hard to explain over the phone, or the person feels that he/she will explain things better if he/she comes over.

Face-to-face communication was better for “complex issues that require interactive feedback to move forward” and “... difficult problems”. There were also times when people simply felt:

A need to socialize. One of the problems with electronic communication is your interpersonal skills atrophy from lack of use. You tend to sit in your office in front of the tube all day. Over time your ability to relate to other people face-to-face suffers as you forget the rules.

The common concern about the loss of organizational cohesiveness with increased reliance on ECTs was shown to be unfounded in the current study. Implicitly, subjects seemed to feel that there was no change in face-to-face communication or there was an increase in face-to-face communication as a result of their use of ECTs. This reasoning was confirmed by comments from the focus group:

I guess I would say overall that they [ECTs] have no effect on the amount of face-to-face contact I have with others in the company.

I don't think any of the electronic media have any impact on how much face to face contact I have with friends – e-mail in particular, and voice mail to a lesser degree, just make more interaction possible.

In general, subjects felt that there were still times when people must meet face to face for certain things. What really changed when

using ECT was that, overall, co-worker interaction increased.

What is the relationship between electronic and face-to-face communication?

ECTs were the primary form of communication for most subjects (see Figure 7). On a scale of 1 to 5 (1 being 1-20 per cent of daily communication via ECT, 5 being 81-100 per cent) the mean was 3.35 (standard deviation was 1.06).

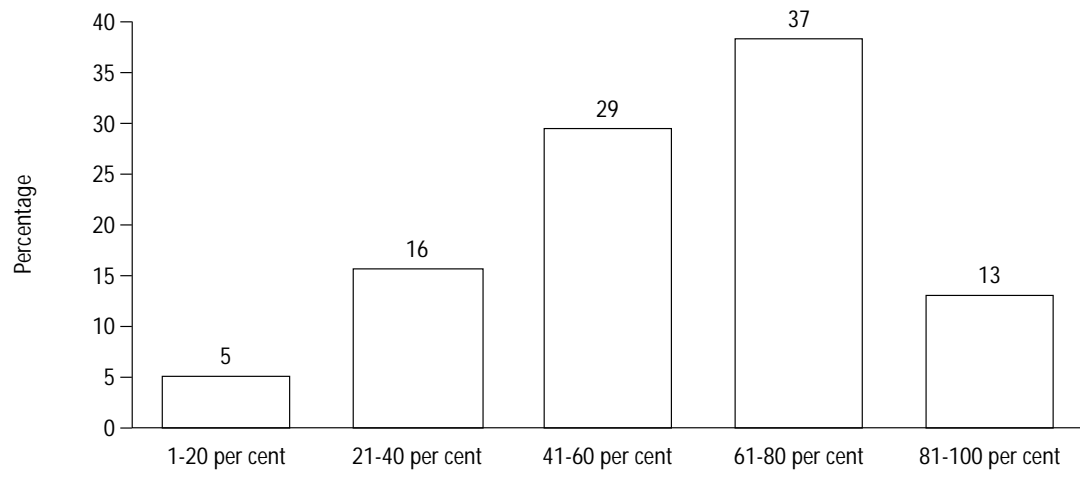
As one subject stated, “I live in e-mail”. In fact, 65 to 70 per cent of communication at the company was via ECTs. Thirty-seven per cent of respondents used ECTs in their interactions with co-workers 61 to 80 per cent of the time, and another 13 per cent used them 81 to 100 per cent of the time.

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 '...it seems that in some ways developing relationships can be easier using ECTs than it is for face-to-face communication...'

The kind of informal patterns of communication that some researchers have proposed to be important in organizations [2,3] also appear when workers are communicating electronically. One employee stated that the kind of communication his/her working group has is just like what they would have if “the bunch of us worked all day every day in the same (large) office”.

Subjects appeared to have little trouble meeting others in their organization using ECTs. In fact, it seems that in some ways

Figure 7 Percentage of daily communication via ECTs



developing relationships can be easier using ECTs than it is for face-to-face communication. One can join newsgroups and meet others who are interested in the same thing as oneself. This way, people can make connections with others they might otherwise have never met. Those who are shy or uncomfortable meeting others face to face may benefit by being able to “meet” people for the first time via “safer”, electronic media.

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 ‘...organizational learning involves becoming an “insider” to the organization...’

Brown and Duguid[4] proposed that organizational learning involves becoming an “insider” to the organization. They state that one must learn to interact with the informal community and share stories with it in order to learn their jobs and fully understand and participate in the corporate culture. There is some question whether employees who are communicating electronically are at a disadvantage when it comes to this type of learning. However, the current study seems to suggest that ECTs are good for sharing technical information, insights and experiences about how the system works and how to get things done. Hence ECTs would seem to be able to maintain the organizational communities of practice, at least, in part.

Research limitations

The participant organization had a unique organizational culture within the Silicon

Valley culture. It was selected for this very reason. It provides an idea of how a technologically sophisticated company uses ECTs as part of its overall communication patterns. The organization is a dynamic, technologically advanced corporation with employees working and collaborating from a wide variety of locations. Employees have a range of ECTs available to them which they are expected to use in order to accomplish their collaborative work.

Clearly the participant organization and its employees are somewhat unusual in the corporate world. This presents an obvious bias to the current study. However, because the organization is quite advanced in the use of many forms of electronic communications rather than being new to the ECTs experience, it was felt that the comments and experience from subjects would be particularly useful in giving a picture of the effects of ECTs on workplace communications. As a result, their experience is more likely to be indicative of what the future holds than that of a company that has just started using e-mail.

Workplace implications and future studies

Many individuals who have no, or limited, experience using ECTs are convinced that media like e-mail are a limited, if not poor, way of communicating, and that they are no substitute for face-to-face communication. The aim of this study was to examine how relatively sophisticated ECT users used ECTs to communicate, and how electronic communication might affect face-to-face communication. The current study suggests that:

- ECTs' effectiveness for obtaining work-related information is substantial, and that it complements but does not eliminate the need or value for face-to-face communication.
- ECTs can play a critical role in obtaining work-related information in a timely and effective manner. This suggests that meaningful aspects of face-to-face communication can be achieved using ECTs, thus removing some of the perceived barriers to new ways of working such as telework, that involve remote work and communication.
- Working remotely should not be viewed as working 100 per cent in isolation; rather, it involves a dynamic pattern of electronic and face-to-face communication in which the value of both varies over the course of a project, but in which electronic communication may be prevalent.

As technology progresses and the bandwidth of information communicated via ECTs increases, there will be many changes in people's perception of whether or not ECTs

can replace face-to-face communication. Perhaps in the near future, when desktop video-conferences are as common as sending e-mail is today, there will be a change in the barriers people perceive. No longer will conflict resolution and other such judgemental tasks require people to be in the same room. Instead, people who work together may only see each other face to face on social occasions which will help to maintain the human side of organizations.

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