

Communications Research Centre

ATTITUDES TOWARDS CHANGES IN COMMUNICATIONS TECHNOLOGY: THE INTRODUCTION OF TELECONFERENCING

by

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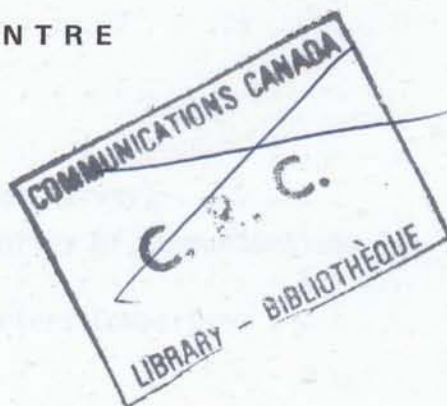
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COMMUNICATIONS RESEARCH CENTRE

DEPARTMENT OF COMMUNICATIONS
CANADA



ATTITUDES TOWARDS CHANGES IN COMMUNICATIONS TECHNOLOGY: THE INTRODUCTION OF TELECONFERENCING

by

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ABSTRACT

A questionnaire survey was conducted in the regional offices of the Department of Communications in the summer of 1974 to determine the attitudes and perception of managers towards the installation and usage of an audio teleconferencing system. These data were compared with results obtained from a previous survey conducted at headquarters. The following results were obtained:

- 1) regional respondents indicated more positive attitudes towards the introduction of teleconferencing than headquarters respondents;
- 2) the perceived need and utility of teleconferencing facilities were higher in the regions than those reported by headquarters respondents;
- 3) respondents of both samples do not perceive the possible effects of this medium on communication behavior;
- 4) both samples indicated a need for audio-graphics or audio-visual facilities to conduct their meetings.

1. INTRODUCTION

1.1 BACKGROUND

The present study was a follow-up for regional offices of Communications Canada, undertaken by Human Science Research of McLean Virginia under the auspices of the socio-economic branch of the Department of Communications.

The purpose of the study was to determine empirically the receptivity of a sample of middle and senior government managers to the installation, implementation and utilization of teleconferencing facilities.

The term teleconferencing facilities is used broadly to refer to "all electronic means that permit two or more groups of physically separated users to communicate with one another". It is possible to distinguish at least three levels of teleconferencing equipment on the basis of technical sophistication and communications capabilities: audio facilities, audio-visual facilities, facilities for transmission and display of alphanumeric information, etc.

Modern government is exceedingly complex in terms of both structures and processes. As a consequence, modern government requires a system of communication that is equally complex. Communication links must exist within and between governmental departments and levels as well as between government and private sector. The problem of suitable communication (and improved government functioning) is further complicated in Canada due to the geography and population distribution of the country.

It is felt that increased governmental utilization of telecommunication facilities could improve communication (and thereby improve government functioning) in at least three ways:

- a) teleconferencing facilities can potentially permit fuller and more timely *exchange of information* within and between government departments as well as between the government and private sector.
- b) teleconference facilities can potentially ease the *decision making* process allowing physically separated experts to diagnose situations and recommend alternative courses of action.
- c) teleconference facilities can potentially improve *organizational control* by allowing for rapid and diverse feedback which serves as a valuable indicator of organizational malfunctioning and bureaupathology.

The foregoing indicates that the potential benefits of teleconferencing facilities are readily apparent. Yet, implementation is difficult and demanding. Some rather elaborate teleconference systems are in use but others have been installed and lie dormant. These mixed reactions gave rise to the need for the present study, a users need study which can "help identify requirements, provide indications of degree of acceptance or non-acceptance and identify teleconference priorities among users and uses."

In order to assess accurately the perceived and actual needs of potential teleconference users it was necessary to develop a survey instrument which would be capable of coming to terms with each of the following problems:

- a) The awareness that present communications facilities and patterns to a large degree determine needs and attitudes. The need for teleconferencing equipment may be less than obvious to many potential users.
- b) Even though teleconferencing may replace the formal structure of meetings, it may be incapable of replacing the informal aspects of meetings (corridor discussions, high status associated with travel, etc.). Lack of enthusiasm regarding the implementation of teleconferencing facilities may result from these latent considerations rather than from the perceived inadequacies of teleconferencing equipment.

Before deciding on the final research design, numerous approaches to defining user needs were considered and discarded because they did not "provide descriptions of a specific conference context and environment from which to derive needs and establish requirements. All of those approaches which were judged inadequate would ask respondents to sum across all meetings they happen to think of when the question is asked and from this summation to judge which teleconferencing facilities would be appropriate".

The approach that was decided upon would have each respondent describe a recent meeting he attended that required him or others to travel. Questions were asked about communications, both formal and informal, that occurred in connection with the meeting. Respondents were then asked to fit this meeting into a teleconference environment. This approach yields descriptions of specific meetings and communication practices, and a means of relating these to levels of teleconference equipment required to hold these meetings.

By describing a specific meeting, the respondent makes his projections from a set of events that he has recently experienced.

The following steps were taken to develop and check out the questionnaire format:

- A. Background materials on teleconferencing and teleconference equipment were reviewed.
- B. Teleconferencing facilities and groups who use them or who are in the process of installing them were contacted.
- C. Conferences were held with potential users of teleconferencing facilities in three departments of the federal government.
- D. Information collected from the above sources served as a basis for development of a rough draft of a questionnaire. This draft was reviewed and revised and preparations were made for pretesting.
- E. The original questionnaire was pretested twice. All respondents were asked to complete the form and then to discuss any questions or explanations that were not clear to them.

The survey instrument was designed to be self-administered with an average completion time of 30-35 minutes.

The survey instrument is divided into four sections (A through D).

Part A was designed to elicit from the respondent background information relating to his department, title, age, group and level.

Part B asked the respondent to describe a meeting that he had recently attended. The respondent was asked to describe the structure and characteristics of that meeting. Questions were asked relating to the size, location, urgency, purpose and conduct of the meeting.

Part C described four different levels of teleconference facilities and then asked the respondent to select those teleconferencing facilities most suitable to the meeting described in Part B. This was omitted in the regional survey reported here.

Part D asked a number of attitudinal questions relating to the acceptability and perceived utility of teleconferencing equipment.

The survey data discussed in this report were gathered via a questionnaire sent to senior and middle level officials in the regional offices of Communications Canada. The questionnaire was a modified form of that previously used to survey eight federal government departments. Respondents in the "headquarters" survey had been asked to choose one of the four levels of teleconferencing facilities that they judged to be appropriate to the meeting they had described. They were also asked to designate which of those facilities would be appropriate to a future meeting. The respondents from the regional offices of Communications Canada has only a single teleconferencing system described to them as follows:

"The system, to be located in existing conference rooms, consists of four microphones and a speaker at each location. The microphones are voice-activated, hence all locations (one microphone per location) are heard simultaneously. The delay between the switch of the active microphone at each location can be varied if desired. Two or more locations can be conferenced in a pre-selected or dial-up basis. Provision can be made for the transmission of written materials, graphs and charts, and access to computer facilities".

This provides the referent for questionnaire items dealing with teleconferencing in a less ambiguous manner than was extant in the headquarters survey. About 70 questionnaires were distributed throughout the regional offices and 49 useable responses were obtained yielding a response rate of about 70 percent. The information obtained was coded in a manner consistent with that used in the earlier headquarters survey so as to allow comparisons (particularly within Communications Canada). The data was transferred to machine readable form (punched and verified on IBM cards) in order to be processed using the Statistical Package for the Social Sciences (SPSS) available on the CYBER73 (CDC6400) at the University of Western Ontario.

1.2 SUMMARY OF RESULTS FROM THE HEADQUARTERS SURVEY

The report analysing responses of senior and middle managers in eight federal government departments can be briefly summarized as follows:

1. Although the survey design was reportedly balanced between senior and middle managers (30 each per department), only 88 responses from senior managers were obtained.
2. In describing the meeting they last attended, 62.6 percent said there was some urgency, but only 16.9 percent indicated that they knew someone who could not attend because of travel constraints. This lack of perceived constraint and the fact that most of the participants (82% of the 2,777 attending) were based where the meeting took place both indicate that the design criteria emphasizing meetings where many individuals had to travel were not met.
3. The experience of the vast majority of respondents was that the meetings attended were fairly informal. Most of those in attendance knew one another before hand and informal and well as non-verbal communications were both widespread and important to the accomplishment of meeting goals. These facets of communication are difficult to duplicate using teleconferencing facilities.
4. Respondents felt that either audio-graphic or audio-visual teleconferencing would have been needed to handle the meetings reported via teleconferencing. However, when asked if teleconferencing facilities (referent unspecified) would help them to perform job specific communications functions, most respondents indicated that they were unsure of the application of teleconferencing to their work. Even in these eight departments that are considering installing TC equipment, relatively few persons (33.7%) are in favour of it. Most want to study it further, but few (only 2%) would oppose its introduction. There was some perceived resistance because others liked to travel, because of problems with impersonality and because it was felt that TC would generate too many meetings.
5. The relationship between summary scale dealing with attitudes towards teleconferencing (ATIT), perceived communications requirements (CR) for job, specific functions and the utility of teleconferencing in meeting those specific needs (PUT) indicated that it was perhaps too easy for respondents to indicate that TC would help, particularly if they held favourable attitudes towards it. However, one might also speculate that this only indicates the perceived ability of TC in improving performance beyond requirements, if attitudes towards TC are favourable.
6. Only 60 percent of the respondents saw any changes in communications behaviour resulting from the introduction of teleconferencing. While respondents were obviously cautious in their assessments of TC, they do not always accurately perceive the possible extent of problems that might arise with extensive and prolonged use.

7. Investigation of the determinants of TC showed there to be few systematic "barriers" to its introduction. However, respondents from Communications Canada had the lowest score on the attitude scale and relatively few of these respondents felt that sophisticated equipment would have been needed in their meetings. Senior executives had the highest scores on CR, PUT and ATIT, while the technical group perceived the least need and had the least favourable attitudes. Only the urgency of the meeting and the perception of travel constraints for the participants were positively related to more favourable attitudes towards TC and its utility. No factors were negatively related, including the informal communications characteristics of the meetings reported.
8. A good deal of education and training seems necessary to the introduction of TC, as many respondents do not perceive the possible effects that such technology would have upon communications behaviour, particularly if TC was extensively used. However, they may only be assuming that the use of TC would not be extensive. TC will not substitute for all face-to-face meetings or even a majority of them, particularly where the provision of even the most expensive equipment would not completely substitute for informal communications important to both meeting success and the smooth functioning of departmental communications in general. Teleconferencing is not viewed as the magic answer to communications problems.

1.3 SUMMARY OF RESULTS FROM THE REGIONAL SURVEY OF COMMUNICATIONS CANADA

1. Few characteristics of the meeting or of the respondents position were significantly correlated with their scores on summary indices indicating attitudes towards and the utility of teleconferencing. Again, this might be interpreted to indicate that there were few barriers to the introduction of teleconferencing facilities. However, it might also be used to question the validity of the attitude items or more simply to indicate that the meetings one attends have little to do with one's attitudes towards possible changes in communications technology.
2. Respondents fit the utility of teleconferencing fairly closely to their perceived job communications requirements. If anything, they indicated a willingness to try teleconferencing even where they did not need it. Generally, both their perceived need and the utility of teleconferencing facilities were higher than those reported by headquarters respondents. Relatively few strong attitude statements towards TC were recorded. Responses were characterized by ambivalence with a more positive tendency.
3. Many respondents do not see changes in communications habits that might come about through the introduction of teleconferencing facilities. Also, in the regional sample those that do see changes tend to have more negative attitudes towards TC.

4. Although the meetings reported were characterized as being fairly formal, there was generally heavy reliance on non-verbal and informal communications. This included a very high use of visual presentations within the meetings. Despite this even higher level of importance attached to some informal communications behaviour, they were not negatively correlated to a significant degree with any of the indices of attitudes towards teleconferencing.
5. Regional differences in communication requirements and attitudes towards TC are not significant, although Ontario respondents averaged the highest score and those in British Columbia and the Prairies scored lowest (relatively most unfavourable attitudes and least need). However, there were significant differences between regions with respect to the perceived potential usefulness of teleconferencing for specific job functions. Ontario rates the potential usefulness of teleconferencing relatively highly, while Quebec exhibited far more negative attitudes.

1.4 COMMUNICATIONS CANADA REGIONAL-HEADQUARTERS COMPARISON

1. Regional respondents were older, but occupied less senior positions within management structure.
2. Meetings reported were larger, lasted longer, were less frequent and less urgent for regional respondents than they were for those from the Ottawa headquarters of Communications Canada. They were somewhat more formal, but at the same time, they placed a higher value on informal communications. This was particularly true of corridor discussions and the contacts made at meetings. Regional respondents relied much more heavily on these informal communications channels and the opportunities for contacts which such meetings provide only infrequently for them (given an average of four months between the interview and the meeting reported).
3. Headquarters respondents were far more likely to see possible negative consequences of teleconferencing than were regional respondents. Put differently, regional respondents were more positive towards the introduction of teleconferencing. However, differences in the description of teleconferencing made available to the respondents in the two surveys counsel caution in interpreting such differences. However, it seemed safe to conclude that regional respondents were somewhat less likely to view teleconferencing as a substitute for their infrequent meetings. This is one way in which both the positive value of informal communications at meetings and the positive value of additional communications facilities that might run counter to the use of informal channels could be rationalized.

1.5 RECOMMENDATIONS

1. Given the lack of systematic information on present communications patterns within and between various government departments both in

Ottawa-Hull and in the Provinces, the improvement of communication first necessitates the more thorough study of this communication behaviour. Where possible, such information should be collected through observation and the study of records with selected interviews used only once a base of information has been built up. Perhaps as a last step a questionnaire survey might be undertaken to estimate the extent of various practices through the government services.

2. Given the possibility that teleconferencing will be put to use in various areas in the near future, the experimental introduction of teleconferencing in repeated trials over several months might be profitably assessed, particularly from a base of information that would be collected in "1" above. This could be initiated in such a manner so as to provide feedback of a technical nature as well as information on performance to the participants themselves.
3. The introduction of teleconferencing in the face of respondents seeming lack of information about it points to the necessity of carefully formulating a programme to provide the information and training necessary to the effective use of teleconferencing. This might well include not only demonstration, but practice use and assessment of recordings of that use.

2. CHARACTERISTICS OF SUBJECT POPULATION

2.1 CHARACTERISTICS OF RESPONDENTS: REGIONAL SURVEY

The respondents ranged in age from 25 to 64 with an average age of approximately 46. The typical respondent was a "lower" manager in the Technical-Electronics management group. Two thirds of the respondents were classified as belonging to the lower level of management. The largest regional representation (Table 2.1) is from Ontario (37.6 percent), followed by the Maritimes (22.9 percent).

TABLE 2.1

Regional Distribution of Respondents

Region	No. of Respondents	Percent of Respondents
Ontario	18	37.6
Maritimes	11	22.9
Quebec	7	14.6
Prairies	6	12.5
British Columbia	<u>6</u>	<u>12.5</u>
	48	100.0%

N = 49 One respondent did not report this information.

2.2 CHARACTERISTICS OF THE MEETINGS: REGIONAL SURVEY

The typical meeting described was attended by about 10 to 12 participants with most of them (approximately 80 to 100 percent) reported as actively participating. The meetings normally had either no senior management personnel in attendance (about one-half the cases), or one senior manager (about one-third of the cases). Most meetings had no non-governmental personnel in attendance and there were generally few people there from outside Communications Canada. The meetings reported varied from those involving only middle managers to those which included many different levels of personnel.

The most widely reported purpose of the meetings was planning (85 percent of the meetings were so described). Sixty-five percent of the meetings involved information transmission and an equal number involved problem solving as explicit goals of the meeting.¹ Thirty percent of the respondents indicated that the meeting involved performance review² and 35 percent indicated that there was some degree of urgency to the meeting. However, only 6 percent indicated that the meeting was used for "crisis" decision making. Thus, the subject matter of the meetings was quite varied and the meetings relatively routine.

About one-half or more of the people attending each meeting were from out of town, but only 20 percent of the respondents indicated that they knew of someone who could not attend the meeting because of travel constraints. Clearly, there is a good deal of travel necessarily involved in such meetings and it acts as a constraint on participation in some cases. However, the extent of this constraint should not be exaggerated. Neither should such an observation be taken as an automatic indication that TC would be desirable as a "substitute for travel" or because of travel constraints.

Only 4 percent of the respondents indicated that most of the people attending the meeting had not previously met and the majority of the meetings were reported to be informal in nature. However, most had designated chairmen and 83 percent had some kind of formally organized agenda.

Over half of the respondents indicated that "corridor discussions" were of positive assistance in accomplishing the meeting's objectives. More than 87 percent of the respondents indicated that "observing the reactions of others" was of positive import, and 85 percent rated "side comments" as positively important to the success of the meeting.

Almost half of the respondents (43 percent) felt that the contacts made at the meeting were "very important" and another 41 percent felt that the contacts were "important". Twenty-eight percent felt that the meetings allowed them to get acquainted with people they would have to interact with in the future and 32 percent said that the meetings allowed them to transact other business than that which the meeting had on its agenda. Finally, a further 18 percent said that they both made useful contacts *and* transacted other business. In these respects as well, then, over three-quarters of those responding to the questionnaire found that these meetings had other important "informal" components.

¹ It should be noted that the context of this question suggests formally designated goals. Clearly any meeting would involve information transmission and all meetings would include problem solving, even if the only problem was the transformation of information. Such ambiguities in questioning render the interpretation of responses difficult (Cf. Appendix 1).

² Percentages sum to over 100 percent because meetings rarely had one purpose.

TABLE 2.2
The Importance of Informal Communications: Regional Survey

	Key to Accomplishment	Helped	Neither	Distracted	No Discussion
18. Corridor discussions N = 48 (1 missing)	2 4.1%	23 46.9%	15 30.6%	1 2.0%	7 14.3%
<hr/>					
	Very Important	Important	Helped	Unimportant	
19. Observing reactions of others (N = 48)	9 18.8%	13 26.5%	20 40.8%	6 12.2%	
20. Side comments, secondary discussions (N = 48)	10 20.4%	13 26.5%	18 36.7%	7 14.3%	
21. Contacts made at meeting (N = 49; 10 made no contacts)	17 34.7%	16 32.7%	6 12.2%	0 0%	

The picture that emerges is of meetings that generally have some formal structure (a designated chairman and some kind of an agenda), but rely heavily for their success on face-to-face interaction, visual cues, and communications outside the formal structure for purposes not on the agenda. The degree of informality of these meetings and the number of people acquainted with each other are logically consistent with the diversity of purpose and high rate of participation reported. The widespread positive regard for informal discussions, side comments and observable reactions underline the necessity of flexibility in achieving the meeting's goals. In addition, the high regard for the simple function of meeting people (making contacts) clearly demonstrates the importance of personnel knowledge in successfully initiating and maintaining interaction. Respondents clearly attach a good deal of importance to informal communication networks.

There is a significant possibility that such meeting characteristics would be substantially altered by the use of TC equipment. The degree of informality present would suggest that decision making may often be conducted as a moving consensus. The introduction of formalized channels of communication necessary with TC might also formalize operating procedures and decision making processes. Unfortunately, there are no guarantees that such a change would increase or strengthen the "general resolve" or improve the effectiveness of the group. This is not to argue that decision making by general consensus is necessarily a more efficient manner in which to run a meeting, or even that it is always more pleasant for the participants. We only wish to point out that the use of TC facilities would in some ways *limit* the alternatives available and would necessitate serious adjustments in other aspects of control and communication in the interests of maintaining operating efficiency. In fact, the formality that might be introduced into meetings by TC equipment could lead to a polarization or fragmentation of opinion that would be difficult to integrate into decisions (particularly when compared to informal face-to-face discussion). Such mechanisms could formalize indications of consent or opinion and lead in turn to something like formal voting.

These observations concern only *possible* changes that would obviously vary with the extent to which TC equipment was substituted for face-to-face meetings. They also involve many conditionals ("ifs") and are therefore *strictly speculative*. Such reasoning is, however, necessary in order to anticipate the possible consequences of the introduction of new communications technology. It should be given serious consideration because of the substantial possibility of altering a wide variety of meeting characteristics, presently seen as crucial to operating effectiveness.

Before leaving the characteristics of the meeting it should be observed that two-thirds (67 percent) of the respondents indicated that some sort of visual material was used in the meeting. Half of them reported that personal hard copy (documents, handouts, etc.) was used, 34 percent said that large hard copy was used (charts, maps, etc.), and 14 percent said that some form of electronic media (film, slides, overheads, etc.) was used. Furthermore, 22 percent felt that the meeting could not have succeeded without this material, and another 26 percent felt that the visual material was important to the meeting. Altogether, 67.3 percent of the respondents indicated that visuals helped in some way. This indicates that if TC is to be effective under the vast majority of circumstances, there must be some provision for the transmission of hard copy. However, this could be obtained in the form of circulated documents as well as through the transmission of hard copy or visual signals. Clearly, the use of only voice communication might severely limit the applicability of this new technology.

2.3 POSSIBLE USES OF TC FACILITIES

Table 2.3 describes the regional respondent's answers to queries concerning the possible uses of teleconferencing equipment. This involved first asking whether a respondent's work required a general kind of task followed by a question concerning the possible helpfulness of teleconferencing facilities. The most often required function of the respondents was normal exchange between Ottawa and regional offices and this too was seen by most respondents (77.5%) as an area in which TC facilities could help. There was widespread involvement in some emergency decision making indicated and a feeling that TC facilities could help, even if this kind of activity only occurred from time-to-time. Similarly, a majority (67.4%) reported that their jobs involved "rapid feed-back" and 67.4% felt that TC might be of some help. The same pattern held for participation in education or training and inter-departmental information exchange. 75.5% reported that their jobs involved the transmission of experience but only 44.9% confirmed that TC would help with an additional 18.4% indicating "may be" (only 63.3% "in favour"). Understandably, few were required to handle intra-departmental coordination amongst physically dispersed units in the Ottawa-Hull area. More surprisingly, the largest percentage of negative responses was to the potential helpfulness of TC in the area of education and training (32.7%). On the face of it, this would seem to be the kind of task for which TC would be easily suited.³

³ However, note that the description of this kind of task is very narrow, specifically, it omits the notion of feedback and seems to imply one-way information flow (Table 2.3).

2.4 ATTITUDES TOWARDS TC FACILITIES

Table 2.4 reports subjects attitudes towards the installation of teleconferencing equipment. Only one respondent disagreed with the statement to the effect that TC equipment would allow for better coordination with regions. 26.5 percent were unsure of the effect of TC on regional coordination while 65.3% gave a positive response. Although individuals felt TC would allow for better coordination, there was some indication that there might be problems in the impersonal nature of the communications (10b). However, the most prevalent response to this question was still favourable in nature. 63.3 percent felt that the managers would use the equipment and another 26.5% were unsure of whether or not managers would use the equipment. Only 6.1% felt that it would not be used by managers. 59.2% were unsure as to whether the equipment would be of use in permitting better coordination between departments in Ottawa and an additional 16.4% did not respond to the question. However, this is the response one might expect from people at the regional level. 59.2% of the individuals felt that the other people in their departments would be favourably disposed to the introduction of a TC installation. 28.6 percent (almost all the rest) were unsure of the response of others to the programme of TC installation with only 6% feeling that others in their department would not be favourably disposed toward TC.

In response to the statement "There are too many meetings already - TC would make things worse" only 2% responded positively. The vast majority (78%) expressed favourable opinions towards TC (or meetings?) by answering this question negatively. A similarly large percentage (80%) were in agreement with the statement that TC would save travel time. It is interesting, however, that this is quite different from the question as to whether TC would save in overall costs. 55 percent responded that they were not sure whether TC equipment would save money. Respondents were evenly split between the disagree and not sure categories (40.8% in each) in response to the question as to whether the installation of TC would be unpopular because people like to travel. This response pattern can be interpreted in two ways. The responses in the unsure category might mean just that -- people were not sure whether others like to travel. However, it may also mean that at times they perceive others as enjoying travel and at times they did not. Even if TC was installed the need to travel to meetings would not totally be removed. 40 percent of the respondents indicated that they either agreed or were not sure to the question as to the limitations upon the use of TC because of the number of their contacts outside of the government. This might be an important limitation upon the use of the equipment.⁵

The response pattern to the question of overall desirability of the installation of TC equipment is given in Table 2.5. The modal response is that it is worth study with more positive than negative attitudes to the equipment. This is a similar trend as indicated in the specific "usefulness" questions. While only 36.7% are presently in favour, only 4.1% indicated that they would oppose the installation of TC equipment.

⁵ In general, the negatively phrased questions find respondents slightly less in favour of TC. This indicates a slight positive response bias.

TABLE 2.4

10. Do you agree or disagree with these statements about installation of teleconferencing equipment in departments of government?			
	Agree	Not Sure or Don't Know	Don't Agree
a. It would permit better coordination with regions.	65.3% <input type="text" value="32"/>	26.5% <input type="text" value="13"/> (3 missing)	2.0% <input type="text" value="1"/>
b. It would make communications too impersonal.	14.3% <input type="text" value="7"/>	22.4% <input type="text" value="11"/> (2 missing)	59.2% <input type="text" value="29"/>
c. Managers would use it.	63.3% <input type="text" value="31"/>	26.5% <input type="text" value="13"/> (2 missing)	6.1% <input type="text" value="3"/>
d. It is needed to permit better coordination between departments in Ottawa.	22.4% <input type="text" value="11"/>	59.2% <input type="text" value="29"/> (8 missing)	2.0% <input type="text" value="1"/>
e. People in my department would be receptive.	59.2% <input type="text" value="29"/>	28.6% <input type="text" value="14"/> (3 missing)	6.1% <input type="text" value="3"/>
f. There are already too many meetings; teleconferencing would make things worse.	2.0% <input type="text" value="1"/>	14.3% <input type="text" value="7"/> (3 missing)	77.6% <input type="text" value="38"/>
g. It would save in travel time.	79.6% <input type="text" value="39"/>	8.2% <input type="text" value="4"/> (2 missing)	8.2% <input type="text" value="4"/>
h. It would save in overall costs.	32.7% <input type="text" value="16"/>	55.1% <input type="text" value="27"/> (2 missing)	8.2% <input type="text" value="4"/>
i. It would be unpopular; most people like to travel.	14.3% <input type="text" value="7"/>	40.8% <input type="text" value="20"/> (2 missing)	40.8% <input type="text" value="20"/>
j. Its use would be limited; most of our contacts are outside of Government.	16.3% <input type="text" value="8"/>	22.4% <input type="text" value="11"/> (1 missing)	59.2% <input type="text" value="29"/>

TABLE 2.5

What do you personally think about the desirability of installing teleconference equipment in your agency? (Mark any that apply)

a. <input type="checkbox"/> Never thought about it	4	8.2%
b. <input type="checkbox"/> Would oppose it	2	4.1%
c. <input type="checkbox"/> It's worth study	23	46.9%
d. <input type="checkbox"/> Mildly favor	8	16.3%
e. <input type="checkbox"/> Strongly favor	10	20.4%
(2 missing)		

TABLE 2.6

If teleconferencing facilities were adopted, do you feel that their use would introduce any changes in communications practices or habits in your group or department? Yes 29 No 9 Don't know 5
59.2% 18.4% 16.3%

a. If Yes, what changes? encourage communication (22 - 44.9%) more efficient (4 - 8.2%)
more rapid decision making (4 - 8.2%) better co-ordination (9 - 18.4%) negative
effects (5)

59.2 percent of the respondents indicated that they felt that there would be changes in communication habits. Clearly, the extensive introduction of TC would indeed cause changes. Change is involved in the very nature and use of the equipment. It is interesting to note that 18.4% of the respondents felt that there would be no change in their communication habits. This indicates that since changed communication habits are an integral part of the introduction of TC, either 20% of the respondents had not really thought about it or more importantly that it would in fact not change their habits, that is, that it would not be used. As to the specific changes indicated, only one allowed for analysis, that is, the general statement that TC would allow for better communications. Other statements as to the expected changes ranged from "less efficient" to "less travel" but there were too small a number in each case to allow for any analysis.

Summary scales were constructed for work requirements, the usefulness of TC and respondents attitudes towards it. In each case, items were scored on a three point scale with high scores ("often", "yes" and "agree") scored two and the lowest category scored zero ("no", and "don't agree" respectively). In the formation of the attitude scale, items 10b, f, i, and j were recoded since in these cases "don't agree" represents a positive attitude towards TC. Summary scores were divided by the number of items in the scale to yield scale scores ranging from zero (low) to two (high).

The summary scores for work requirements indicate that very few respondents have jobs where TC would not be appropriate in some form or other at some time. Most respondents jobs involve some such tasks some of the time with scores ranging from 0 to 1.38 out of a possible 2.0. The mean score on the usefulness scale (1.08) is somewhat higher than the average for the work requirements scale (.84). TC facilities are seen as possibly expanding job functions. Again, the attitude scale shows a fairly positive attitude overall (a mean score of 1.48 out of two) with only three respondents scoring less than 1.0 (indicating a negative attitude). General attitudes seem to be more favourable than specific usefulness, although even the latter is fairly high considering the breath of activities involved.

TABLE 2.7
Summary Scale Scores for Work Requirements, TC Usefulness and Attitudes Towards TC.

Attitude Scale			Work Requirements			TC Usefulness		
Score	f	%	Score	f	%	Score	f	%
.60	1	2.0	0.0	2	4.1	0.0	2	4.1
.70	1	2.0	.25	1	2.0	.13	1	2.0
.90	1	2.0	.50	5	10.2	.50	4	8.2
1.0	5	10.2	.63	5	10.2	.63	2	4.1
1.10	2	4.1	.75	7	14.2	.75	3	6.1
1.20	3	6.1	.88	9	18.4	.88	5	10.2
1.3	2	4.1	1.0	10	20.4	1.0	6	12.2
1.4	5	10.2	1.13	5	10.2	1.13	6	12.2
1.5	3	6.1	1.25	3	6.1	1.25	3	6.1
1.6	7	14.3	1.38	<u>2</u>	<u>4.1</u>	1.38	3	6.1
1.7	7	14.3		49	100.0	1.50	10	20.4
1.8	6	12.2				1.63	1	2.0
1.9	5	10.2				1.75	1	2.0
2.0	<u>1</u>	<u>2.0</u>				1.88	<u>2</u>	<u>4.1</u>
	49	100.0					49	100.0

In general, the vast majority of respondents indicated that their jobs involved tasks to which TC might be applied and indicated that TC might be useful. However, the modal response to the usefulness of TC was often "maybe" ... a kind of favourable ambivalence. Summed up in the opinion that it was "worth study". While few would declare themselves against the installation of TC equipment, many did not seem to see its costs, or the changes it might bring about.

3. DETERMINANTS OF ATTITUDES TOWARDS TELECONFERENCING

3.1 DIFFERENT MEASURES OF ATTITUDES TOWARDS TELECONFERENCING

As reported above, items concerning the potential usefulness of teleconferencing for various communication tasks were averaged to form an overall summary score, as were the ten attitude items. The intercorrelations of these scales and the single item dealing with the general desirability of introducing teleconferencing facilities are reported in Table 3.1.

TABLE 3.1
Correlations Among Different Measures of Attitudes Towards Teleconferencing: Regional Survey

	1	2	3
1. DESIRABILITY	—		
2. Attitude Scale	.55	—	
3. Usefulness Scale	.57	.32	—
\bar{x}	3.38	1.48	1.08
S_x	1.13	.34	.45

There was a positive association between individuals response to all three types of items represented. The different items are generally measuring some of the same content. However, while the intercorrelation between the desirability item and the two scales are moderate ($r = .55$ and $r = .57$), the correlation between the attitude scale and the scale intended to measure the perceived utility to teleconferencing facilities in the performance of specific communication functions is lower than one might expect ($r = .32$). These low correlations may be a product of the general "positive ambivalence" which subjects expressed in responding to these questions. As has been pointed out above, few subjects responded negatively (attenuating the variance of the items and the scales they form) and many took a "wait and see" posture (teleconferencing was "worth study" or it "might be" of some use). As a result, when questions were presented in different forms, people responded differently. When most respondents do not indicate strong feelings on the subject one way or the other, results are bound to be less than definitive.¹

3.2 JOB COMMUNICATION REQUIREMENTS

Respondents were asked to describe their perceptions of task-specific job communication requirements on the assumption that the demands of their positions would influence their attitudes toward the introduction of new communication technology. Respondents were also asked to indicate their age and management level and to report characteristics of the last meeting they attended. The relationship between these variables and perceived communication requirements are reported in Table 3.2.

TABLE 3.2
Correlations of Personal and Meeting Characteristics With Perceived Communications Requirements:
Regional Survey

	<u>r</u>		<u>r</u>
1. Respondent's age	.06	10. % meeting using visuals	.20
2. R's Management level*	-.23	11. Corridor discussions*	-.11
3. Meeting size	.10	12. Importance of observing others*	-.11
4. Meeting urgency	-.17	13. Importance of side comments*	.07
5. How long ago held	.07	14. Importance of contacts*	-.07
6. Travel constraints	.21		
7. How well participants knew one another			
8. Meeting protocol*	-.36**		
9. Meeting agenda*	-.13		

* Items coded as ranks from high (≈ 1) to low

** Significant at the .01 level

¹ Results obtained in the survey of eight departments in Ottawa closely parallel these with a correlation between the two scales of .38.

While one would not expect, a priori, that age would necessarily be related to communication "needs", the same is not true of management level (here coded as rank order) or of the meeting characteristics. Those in higher management levels hold jobs involving more extensive communications requirements, since such positions would by definition involve responsibility for coordination. While the correlation is in the expected direction, it is not different enough from zero to safely conclude that a substantial relationship indeed exists.

Similarly, questions that dealt with the characteristics of the meeting might be expected to correlate with perceived job functions, since both reference the latter. Larger meetings might be more compatible with high communication needs, as might more urgent meetings², those more formally organized where participants knew one another only slightly, and those where formal communications mechanisms were used only infrequently and were regarded as relatively unimportant. While the direction of these correlations is generally as predicted, only the degree of informality in meeting protocol is even moderately correlated with perceived communications requirements. Reported meeting characteristics may have little to do with description of communications functions performed. This may in part result from the long elapsed time since the meeting referenced (an average of 120 days or about 4 months, with only 36 percent of the meetings in the two months preceeding the questionnaire), which would seem to confirm the "attitudinal" nature of many of these items because of the selective perceptions and retention involved.

3.3 RESPONDENT AND MEETING CHARACTERISTICS AND ATTITUDES TOWARDS TELE- CONFERRING

In designing the survey of attitudes towards teleconferencing a number of hypotheses were implicitly suggested through the inclusion of certain kinds of information. One might hypothesize that older respondents would be more reluctant to innovate. However, the correlation of respondent's age and both perceived utility and attitude scale scores suggests that age is not a significant factor in determining one's attitudes towards the introduction of teleconferencing systems ($r = -.15$ and $-.08$ respectively), even though the correlations are in the direction predicted by this hypothesis.

² Questions dealing with the urgency of the meeting, corridor discussions, observing others reactions, the importance of side comments and contacts are coded as ranks with low scores indicating "high".

TABLE 3.3

Respondent and Meeting Characteristics and Teleconferencing Attitudes Correlations

	<u>r</u>	<u>r</u>		<u>r</u>	<u>r</u>
1. Respondent's age	-.15	-.08	10. % visuals	.21	-.00
2. R's Management level	-.03	-.04	11. Corridor discussions*	.08	.15
3. Meeting size	-.00	-.16	12. Importance of observing others*	-.16	.35**
4. Meeting urgency*	.09	-.01	13. Importance of side comments*	-.05	.19
5. How long ago held	.06	-.25**	14. Importance of contacts*	-.10	.01
6. Travel constraints	.09	.12			
7. How well they knew each other	-.09	.00			
8. Meeting protocol*	-.03	.07			
9. Meeting agenda*	.22	.22			

* Coded as rank orders (high scores coded as a low number)

** Significant at the .05 level or above

While there appears to be some tendency for higher level personnel to perceive their communications requirements as relatively higher ($r = -.23$), there is virtually no association between management level and either the perceived utility of teleconferencing or attitudes towards it. Similarly, one might hypothesize that respondents reporting participation in larger, more urgent meetings or those where travel constraints were perceived to have influenced participation would be more favourable to the introduction of teleconferencing. The observed correlations, however, indicate that these factors are not significantly correlated.

Respondents that participated in more informal meetings where a larger percentage of the respondents knew one another might be negatively disposed to teleconferencing. Indeed, most of the correlations involved are negligible and those describing the relationship between the degree of informality in the meeting's agenda and both utility and attitudes are actually positive ($r = .22$ in each case). The only support for this hypothesis is the negative correlation between meeting protocol and perceived communications requirements ($r = .36$). Respondents who participated in a relatively formal meeting also reported higher communications needs for specific job related tasks.

One might also have expected that a high reliance on visual presentations in the meeting reported might have led people to take a negative attitude towards teleconferencing. Again, rather the opposite was true, the observed correlations of percent visuals with perceived communications requirements and perceived utility were positive (.20 and .21, respectively), although far from strong. It might also be expected that a heavy reliance on informal modes of communication in the meeting reported (corridor discussions, high importance attached to observing others reactions, side contacts or "contacts" made at the meeting) could be associated with negative attitudes towards teleconferencing. While the correlations are generally in that direction (here negative), only the correlation between the importance of observing reactions and attitude scale scores is at all large ... and it is positive. The more important observing the reactions of others, the more positive the attitude expressed with respect to the introduction of teleconferencing facilities.

Table 3.4 through 3.6 report the results of one-way analysis of variance for some of these factors. As one would expect, perceived communication requirements increase as management level increases, although the differences are not significant (Table 3.4). However, the average scores for different management levels do not order themselves in this fashion for either the attitude scale scores or the scores summarizing the perceived potential usefulness of teleconferencing. On the average, middle level managers score lowest on both scales, although this becomes a significant deviation from linearity only for the attitude scale. Some caution is necessary in interpreting these results not only because of the small number of middle and senior managers, but also because even the middle managers average attitude scores reflect a general positive response. They are perhaps a little more ambivalent than other respondents, and obviously only a few different responses may result in such differences.

TABLE 3.4
Attitudes, Perceived Needs and Potential Usefulness of Teleconferencing by Management Level

Management Level	f	Attitude Scale		Need Scale		Usefulness	
		\bar{x}	S_x	\bar{x}	S_x	\bar{x}	S_x
Senior	4	1.7	.32	1.03	.21	1.22	.12
Middle	5	1.2	.42	.90	.20	.90	.28
Lower	<u>38</u>	1.5	.32	.80	.32	1.07	.48
	47						
	r	-.042		-.23		-.03	
	F	2.00		1.23		.58	
	eta squared	.08		.05		.03	
	F	3.92		.01		1.11	

Tables 3.5 and 3.6 indicate that perceived communications requirements are lower for those who report participation in more informal meetings, although the differences are significant for only meeting protocol. This lends some degree of validity to the inference that the meetings reported are a reflection (however partial) of general job requirements. While the differences for the attitude and usefulness scales are small, the few respondents who attended a formal meeting actually indicate less positive attitudes towards teleconferencing than do those who attended more informal meetings. Again, the degree of informality of the meetings reported does not appear to produce negative attitudes towards teleconferencing.

3.4 PERCEIVED COMMUNICATION JOB REQUIREMENTS AND THEIR POTENTIAL USEFULNESS

In general, respondents indicated that their jobs required the specific communications tasks referenced "at times" and they felt that teleconferencing "might" be potentially useful in helping them perform those tasks. Table 3.7 reports the relationship between perceived need and usefulness for each type of communications behaviour. For all communications tasks, perceived job requirements were closely related to potential usefulness of teleconferencing. The more their jobs involved different aspects of communications-related functions, the more respondents indicated that they could use teleconferencing in performing their job.

TABLE 3.5

Attitudes, Perceived Needs and Potential Usefulness of Teleconferencing by Meeting Protocol

Meeting Protocol	f	Attitude Scale		Need Scale		Usefulness	
		\bar{x}	S_x	\bar{x}	S_x	\bar{x}	S_x
Formal Chairman	6	1.28	.35	1.06	.10	1.08	.34
Informal Chairman	36	1.54	.33	.84	.25	1.09	.41
Informal No Chairman	6	1.38	.40	.63	.55	1.02	.81
TOTAL	48	1.49	.34	.84	.31	1.08	.45
	F	1.80		3.40		.06	
	r	.07		-.36		-.03	
	eta squared	.07		.13		.00	
	F	3.33		.01		.06	

TABLE 3.6

Attitudes, Perceived Needs and Potential Usefulness of Teleconferencing by Meeting Agenda

Meeting Agenda	f	Attitude Scale		Need Scale		Usefulness	
		\bar{x}	S_x	\bar{x}	S_x	\bar{x}	S_x
Formal	25	1.39	.31	.87	.28	1.00	.44
Informal	15	1.64	.39	.82	.22	1.13	.42
No Agenda	8	1.51	.28	.77	.49	1.25	.55
TOTAL	48	1.49	.34	.84	.31	1.08	.45
	F	2.73		.37		1.11	
	r	.22		-.13		.22	
	eta squared	.11		.02		.05	
	F	3.03		.00		.00	

Gamma ranged from a low of .61 for emergency decision making to a high of 1.00 for intra-departmental coordination.³ Table 3.7 reports the relationship between perceived job requirements and their potential usefulness for specific communications tasks. It focuses on the "off-diagonal" responses ... responses where there was a communications requirement perceived, but relatively little usefulness of teleconferencing indicated and responses where there was no communications requirement perceived, but respondents indicated that teleconferencing would help anyway.

³ The meaning of this association is clear upon examination of table 3.7. While no respondents reported lower potential usefulness than requirements, quite a few reported higher potential for use than their present job demanded.

TABLE 3.7

Perceived Communication Job Requirements and Their Potential Usefulness

Does Your Work Require	Perception of Relatively Low Potential Usefulness					High Usefulness		
	A % often who say Maybe or No*		B % at times who say No		C A&B as a % of total	D % No who say yes or maybe		Gamma
Normal Exchange	6/15	40%	3/25	12%	18.4	5/9	55.9	.78
Emergency Decision Making	4/8	50	4/30	13.3	16.3	3/11	27.3	.61
Rapid Feedback	3/9	33.3	3/27	11.1	12.2	4/13	30.8	.75
Transfer of Experience	0/1	0	4/39	10.3	8.2	4/9	44.4	.89
Education/ Training	0/1	0	4/30	13.3	8.2	6/18	33.3	.82
Inter-dept. information	3/10	30	1/28	3.6	8.2	5/11	45.5	.77
Inter-dept. decisions	0/2	0	4/30	13.3	8.2	6/17	35.3	.89
Intra-dept. coordination	0/1	0	0/26	0	0.0	9/22	40.9	1.00

Generally, only a few respondents indicated that a perceived communications function would not in fact be helped by the introduction of teleconferencing. While this was relatively less true of "normal exchange", even this involved a "negative response" by only 18.4 percent of the total population. However, these responses (and those reflected in the smaller percentage of low usefulness per requirement for other tasks) do indicate that some people had reservations about the utility of teleconferencing. These interpretations must also include the reminder that most respondents indicated that their jobs required each communications behaviour "some of the time" and that teleconferencing "might" help. While only a relatively few respondents are negative and most are neutral or ambivalent, a fairly large percentage of the respondents who indicated that their jobs did not require a particular communications function, nevertheless indicated that teleconferencing would help. This is true almost uniformly over all job functions, but it is particularly noticeable for "normal exchange". Even in those cases where a fairly sizeable minority of respondents indicated that their job did not require a specific communications related function (education and training, inter-departmental decision making, and intra-departmental decision making), there is still some indication that the introduction of teleconferencing was favourably regarded. Such responses might indicate a perceived need for greater emphasis in these areas of communication, even though the respondent himself is not involved as part of his job.

3.5 ATTITUDES TOWARDS TELECONFERENCING AND CHANGES IN COMMUNICATIONS HABITS

A slightly different light is thrown on the results discussed above when the relationship between the degree of positive response to teleconferencing and perceived stability of communications habits even with the introduction of this new technology. As mentioned above, the introduction of teleconferencing, at least if it was widely used, would necessarily alter patterns of communication and change communication behaviour. However, the correlation of stability (change = 1, stability = 2) with the various indicators of attitudes towards teleconferencing indicates that the more favourably disposed the respondent was to teleconferencing, the less likely he was to see the introduction of this new technology as a source of change in communications habits. While one might argue that people are only indicating that habits are hard to change whatever their content, it is those who see changes in communications behaviour who are relatively more cautious about the introduction of teleconferencing. This shows up in every measure,⁴ but particularly in the attitude scale. Such results suggest that the "positive ambivalence" characteristic of responses may rest on favourability to technological change in general and not knowledge of communications patterns in particular. The possible effects of teleconferencing on communications are probably not recognized by most of the respondents.

TABLE 3.8

**Attitudes Towards the Introduction of Teleconferencing and Predicted Changes¹
in Communications Behaviour: Correlations**

	Correlations
	Would the introduction of teleconferencing result in changes in communications habits
1. Desirability of teleconferencing	-.31*
2. Attitude Scale	-.36**
3. Perceived Communications requirements	-.14
4. Potential utility of teleconferencing	-.30*

* Correlations significant at the .05 level

** Correlations significant at the .01 level

¹ This item is coded so that stability receives a high score.

3.6 SUMMARY OF TELECONFERENCING ATTITUDES

Respondents did not feel strongly about teleconferencing, perhaps because they lacked experience with it. The general "positive ambivalence" that characterized the results attenuated the variance of summary measures and may have in part resulted in the relatively low correlations with other variables. Respondents indicated a fair degree of ambivalence itself may account for the lack of large correlations. Also, the rather long time lag between the meeting reported and the response to the questionnaire is certain

⁴ The low correlation of perceived communications requirements with change in communications habits indicates that change is not a function of perceived job functions.

to have made answers less accurate, except perhaps as a statement of general attitude. In short, it is not surprising that meeting characteristics reported in this manner are not correlated with attitudes towards teleconferencing. However, while the degree of informality and other meeting characteristics are not related to attitudes towards teleconferencing, attitudes towards teleconferencing are related to changes perceived to result from the introduction of these facilities. Those that saw change were relatively less positive about teleconferencing.

The most favourable interpretation that one can place on these results is to stress that there is little negative feeling and no obvious blocks to the introduction of teleconferencing. Furthermore, the more respondents perceived their jobs as involving different communications functions, the more useful they saw teleconferencing to be. A more pessimistic interpretation of these results would indicate that people are ambivalent because they don't know much about teleconferencing, and those that do anticipate the changes that it might bring about are rightly cautious about its introduction.

4. REGIONAL DIFFERENCES IN ATTITUDES TOWARDS TELECONFERENCING

Table 4.1 describes the differences between regions in perceived communications requirements, perceived potential usefulness of teleconferencing and attitudes towards teleconferencing. Unfortunately, the small within-region sample sizes (ranging from 18 in Ontario to 6 in British Columbia, and 6 in the Prairies) make interpretation difficult, since they effectively preclude meaningful analysis of individual characteristics, meeting characteristics and job characteristics as determinants of differences in attitudes towards teleconferencing within regions.

TABLE 4.1

Regional Differences in Perceived Communication Requirements, the Potential Usefulness of Telecommunications and Attitudes Towards Telecommunications.

Region	Perceived Need		Potential Usefulness		Attitude Scale		f
	\bar{x}	S_x	\bar{x}	S_x	\bar{x}	S_x	
Ontario	.98	.30	1.33	.35	1.58	.31	18
Atlantic Provinces	.88	.23	.94	.48	1.54	.39	11
British Columbia	.73	.45	.79	.56	1.45	.39	6
Prairies	.65	.36	.83	.48	1.42	.31	6
Quebec	<u>.79</u>	<u>.17</u>	<u>1.12</u>	<u>.29</u>	<u>1.27</u>	<u>.33</u>	<u>7</u>
TOTAL	.84	.31	1.08	.45	1.49	.34	48
F		1.40		3.12		1.15	

In terms of the degree to which respondents perceived their jobs as involving communications functions which might be met by teleconferencing facilities, those in Ontario clearly indicated the greatest involvement. Respondents located in the Atlantic Provinces indicated the next highest need followed by those in Quebec, British Columbia and the Prairie Provinces. This rank ordering bears little relationship to what one might expect if the principle determinant of regional differences was in fact either their distance from Ottawa, or the general level of development of the region in question. In fact, Ontario respondents expressed the highest communication requirements, while British Columbia and the Prairie Provinces expressed the least. Similarly, the better developed region (Ontario) expressed the greatest need, but the Atlantic Provinces expressed the next highest communications requirements.¹ It should be noted as well that the differences between regions are not large, particularly within the limitations imposed by the small number of responses from within many regions (the F test of differences between regions was not significant).

Results are similar for the scale used to measure the potential usefulness of teleconferencing in performing the communications functions. Ontario has the highest perceived usefulness followed by Quebec, the Atlantic Provinces, the Prairie Provinces and British Columbia. Here, however, the differences between regions are somewhat larger and more consistent ($F = 3.12$ with d.f. 4,43). Respondents in both Quebec and Ontario seem to indicate that teleconferencing might be more useful (particularly relative to perceived need). Once again, British Columbia and the Prairie Provinces, areas far removed from Ottawa, see less utility in the introduction of teleconferencing facilities.

The results for the scale measuring attitudes towards teleconferencing are somewhat different. Like results for perceived communications needs, these regional differences are not significant. However, Ontario again shows the highest average positive attitude towards teleconferencing. The Atlantic Provinces score relatively higher and the respondents in the Prairie Provinces again indicate relatively more ambivalent attitudes. However, respondents from British Columbia seem to have relatively positive attitudes, particularly in the light of the results for the perceived need and potential usefulness scales discussed above. On the other hand, respondents in Quebec have the least positive attitudes towards the introduction of teleconferencing, despite their relatively high scores on the potential usefulness of teleconferencing.

5. REGIONAL AND HEADQUARTERS ATTITUDES TOWARDS TELECONFERENCING

5.1 THE PEOPLE INVOLVED AND THEIR STATUS

Table 5.1 indicates that headquarters respondents are somewhat more likely to be younger. The principle cause of this difference is the large proportion of regional respondents who are in the 50-59 age range. At the same time, the respondents in the headquarters sample have more of their number who have reached higher level positions within Communications Canada. Individuals of similar age might be expected to have higher status if they are at Headquarters.

¹ This is understandable, since communications between the regions and Ottawa represents only one of many communications requirements averaged into the summary score.

TABLE 5.1
Age and Management Level

Age	Headquarters	Region
	%	%
0 – 19	20.3	0.0
20 – 29	1.7	11.1
30 – 39	28.8	24.4
40 – 49	32.2	20.0
50 – 59	15.3	40.0
60 – 69	<u>1.7</u>	<u>4.0</u>
TOTAL	100.0	100.0
missing (f)	0	4
N	59	49

Management Level		
Senior	20.7	8.5
Middle	79.3	10.6
Lower	0.0	80.9
missing	1	4

5.2 MEETING CHARACTERISTICS

The meetings which respondents referred to in answering the questionnaire were larger for the regional data ($\bar{x} = 9.8$ people attending) than for the headquarters data ($\bar{x} = 8.7$). In both cases, not all those attending were considered to be active participants (Table 5.2). However, the proportion of people at the meetings considered to be non-active was small for both regional and headquarters data with the larger difference found for the headquarters meetings.

TABLE 5.2
Meeting Size

	Regions	Headquarters
Average number attending	9.8	8.7
Average number actively participating	9.2	7.0

Descriptions of the degree of urgency involved in the meeting saw most respondents at both headquarters and in the regions indicate that the meetings were not urgent (the "other" category, Table 5.3). However, this was more pronounced for the respondents from the region. In general, they indicated that the meetings referred to were urgent less often than did the headquarters samples.

TABLE 5.3

The Urgency of the Meeting

Percent Responding	Regions	Headquarters
Very urgent	6.5%	12.1%
Urgent	30.4%	43.1%
Other	63.0%	44.8%
TOTAL	100.0%	100.0%

Areas in which there were significant differences between the meetings reported by regional and headquarters respondents included the length of time since the meeting and the length of the meeting itself. On the average, regional respondents referred to a meeting 120 days in the past while headquarters respondents referred to a meeting that was 76.5 days in the past. Headquarters personnel probably found it easier to remember, but the length of time is still substantial. While the regional sample seemed to have meetings relatively rarely, they lasted longer than those in which the headquarters sample participated (an average of 13.8 hours as opposed to 5.5 hours where 1 day = 6 hours).

Travel constraints did not seem to play a role in limiting participation in meetings for either group. 84.7 percent of the headquarters sample and 77.6 percent of the regional respondents reported that they knew of nobody that could not attend because of such constraints.

5.2.1 Communication in the Meetings Reported

There was very little difference between headquarters and regional respondents meetings in terms of the percentage of meeting time in which visual displays of one kind or another were used (47.5% for headquarters and 41.7% for the regions). The high percentage of time devoted to these kinds of communication emphasizes the need to provide for the transmission of hard copy (or visual signals) in the introduction of teleconferencing.²

The formal organization characteristics of the meetings are reported below in Table 5.4. In terms of both protocol and agenda the regional respondents meetings were more often more highly formalized than those of the headquarters respondents. Meetings in which regional respondents participated

² While hard copy could be made available through more conventional means, this would take a good deal of organization and prior planning, particularly where several different locations were involved. It would also necessitate the physical duplication of hard copy in some form far enough in advance of the teleconference so as to provide it (by mail for example) to all participants.

were more likely to have a chairman and a formal agenda. This is understandable given the relative infrequency of these meetings (long length of time since they had been held) and their long duration, particularly the latter.

TABLE 5.4

Meeting Structure: Agenda and Protocol (Percentages)

	Formal Chair	Protocol Informal Chair	No Chair	Formal Chair	Agenda Informal Agenda	No Agenda
Region N = 48 (1 missing)	12.5	75.0	12.5	52.1	31.3	16.7
Headquarters N = 57 (2 missing)	10.5	63.2	26.3	37.9	43.1	19.0

The perceived importance of being able to see others reactions and the importance of side comments are reported in Table 5.5. Regional respondents seem to place less importance on being able to observe the reactions of others than did headquarters respondents (44.9 percent thought it important or very important versus 57.6 percent for the headquarters sample). On the other hand, they placed slightly more stress than did headquarters respondents on the importance of side comments (46.9% versus 42.4%).

TABLE 5.5

The Importance of Seeing Others Reactions and Side Comments

	Observing Reactions				Side Comments			
	Headquarters		Regional		Headquarters		Regional	
	f	%	f	%	f	%	f	%
Very important	15	25.4	9	18.4	8	13.6	10	20.4
Important	19	32.2	13	26.5	17	28.8	13	26.5
Helped	18	30.5	20	48.5	18	30.5	18	36.7
Unimportant	8	10.2	6	12.2	15	25.4	7	14.3
Missing	1	1.7	1	2.0	1	1.7	1	2.0

The importance of corridor discussions was quite different for the regional and headquarters respondents. While the regional respondents did not place heavier stress on "informal" and non-verbal communication within the meeting, they did indicate that corridor discussions were far more important to them than they were to the headquarters sample. The largest difference is in the number of meetings where no such corridor discussions took place (Table 5.6). Almost half (44.8%) of the meetings reported by headquarters respondents apparently had no such discussions, while this was true in only 14.6 percent of the regional meetings. Headquarters personnel may not have had corridor discussions because the meetings were much shorter³. Also, they

might well see each other outside the context of such meetings far more frequently than regional personnel simply because of their closer physical proximity to one another.

³ It would be unlikely that even the most dedicated regional civil servant would not attend a meeting stretching over three days (14 hours average where 1 day = 6 hours) without a break at which such discussions would inevitably take place.

TABLE 5.6
Importance of Corridor Discussions

	Region	Headquarters
Discussions were key to accomplishment	4.2%	3.4%
Helped	47.9	36.2
Neither helped nor hindered	31.3	12.1
Distracted	2.1	3.4
No Discussions	14.6	44.8

Not only did regional respondents have discussions in a higher percentage of the meetings reported, they also found the discussions to be helpful more often. However, among those meetings where corridor discussions were held (eliminating those with no discussions) 60.5% of the regional respondents as opposed to 71.7% of the headquarters sample found those discussions to be helpful. While the regional meetings had more corridor discussions because they were longer, this also meant that some of those discussions were not germane to the meetings.

5.2.2 Personal Contacts in Meetings

One of the functions of meetings is to introduce people to one another so as to pave the way for future cooperation. Questioning as to how well conferees knew one another before the meeting indicates that regional respondents were not as well acquainted with their fellow participants as were headquarters respondents (Table 5.7). While fewer had not met before and the vast majority were acquainted (69.4% of the regions as opposed to 50.8% of the headquarters respondents), fewer reported that they had all worked together before (24.5% as opposed to 37.3%). Regional personnel appear to have less day-to-day contact and familiarity with one another, perhaps because they meet each other relatively infrequently.

TABLE 5.7
How Well Conferees Knew Each Other

	Headquarters		Regions	
	f	%	f	%
Most had not met	6	10.2	2	4.1
Most were acquainted	30	50.8	34	69.4
All had worked together before	22	37.3	12	24.5
Missing	1	1.7	1	2.0
TOTAL	59	100.0	49	100.0

It follows from this that regional respondents would probably make use of their longer, more infrequent, meetings to get to know each other better and that indeed appears to be the case. Since the regional meetings were less frequent and longer, it is also logical to suppose that they would use them as a vehicle for other business. While about the same proportion of both groups reported that the meeting provided a chance to "get acquainted", twice as high a proportion of the regional respondents reported that the meeting provided an opportunity to discuss other business (32.7% versus 16.9%). Also, over twice as high a proportion of regional respondents reported that their meeting provided opportunities to get acquainted and discuss other business (18.4% versus 6.8% of the headquarters sample). So, while 47.5% of the headquarters respondents reported that their meetings were not used for these "secondary" purposes, only 20.4% of the regional respondents indicated likewise.

In addition, regional respondents viewed these contacts as more important. While only about one-half (49%) of the headquarters sample indicated that contacts made at the meeting were important, 67.4 percent of the regional personnel felt that contacts they made were important or very important. It is in this latter category that the difference is most striking - 34.7% of the regional respondents felt that the contacts were very important while only 13.6% of the headquarters sample felt the same way. In this case it is not simply the influence of the larger proportion of those who reported no contacts in the headquarters sample that determines this result. Even among those who report some contacts, a higher proportion of the regional subjects (84.6%) than headquarters respondents (74.2%) felt that they were important or very important⁴.

⁴ It should be noted, however, that a 10 percent difference is not very large when the base in the case of the headquarters respondents is only 31 and that of the regional sample is only 39.

TABLE 5.8

Importance of Contacts

	Headquarters		Regional	
	f	%	f	%
Very important	8	13.6	17	34.7
Important	15	25.4	16	32.7
Helped	8	13.6	6	12.2
Neither	28	47.5	10	20.4
	59	100.0	49	100.0

5.2.3 Summary of Meeting Characteristics

Regional meetings were farther in the past (less frequent), somewhat larger, had a slightly higher proportion of active participants and lasted a good deal longer. They were less urgent than their headquarters counterparts and they tended to be a little more formally organized. Meetings reported by

both groups leaned heavily on visual materials, and neither group reported widespread difficulty with attendance because of travel constraints. While non-verbal communication and side comments within the meetings were about equally important to both groups, regional respondents emphasized the importance of corridor discussions to a much greater extent than did the headquarters sample. This is understandable given the infrequent occurrence and long duration of the meetings reported by the regional sample. In addition, it appears that the regional conferees knew one another somewhat less well and used these meetings as an opportunity to get acquainted and to transact other business more often than did headquarters respondents. Finally, those in the regional sample felt that the contacts they made in this manner were more important. In general, they relied more on "informal" communication and face-to-face contact. These are the aspects of communication that might well "suffer" most were teleconferencing to be extensively utilized.

5.3 PERCEIVED TELECONFERENCING NEEDS

A comparison of the summary scores for communication requirements and the potential usefulness of teleconferencing in meeting them indicates that the average respondent in the regions showed a higher "need" (.839 compared to a .769 average for headquarters respondents) and indicated that teleconferencing would be of more use in meeting that need (1.08 versus .91). The detailed results presented in Table 5.9 can be used to specify these differences.

TABLE 5.9

Communication Requirements and the Utility of Teleconferencing*

		% Often	% At times	% No	% Often	% At times	% No
Does your work require:							
1. Normal exchange	HQ	17.5	42.1	40.4	29.2	31.3	39.6
	R	33.3	46.7	20.0	33.3	51.1	15.6
2. Emergency decision making	HQ	7.0	49.1	43.9	25.5	29.8	44.7
	R	17.8	57.8	24.4	48.9	22.2	28.9
3. Rapid feedback	HQ	22.2	48.1	29.6	22.4	36.7	40.8
	R	19.6	52.2	28.3	42.2	31.1	26.7
4. Transmission of experience	HQ	12.3	47.4	40.4	16.7	47.9	35.4
	R	2.2	78.3	19.6	48.9	31.1	20.0
5. Education and training	HQ	0.0	41.1	58.9	18.6	30.2	51.2
	R	2.2	57.8	40.0	28.6	33.3	38.1
6. Inter-department information exchange	HQ	19.0	65.5	15.5	29.1	45.5	25.5
	R	22.2	53.3	24.4	39.5	41.9	18.6
7. Inter-department decision making	HQ	12.5	42.9	44.6	19.1	44.7	36.2
	R	4.7	55.8	39.5	33.3	28.2	38.5
8. Intra-department coordination	HQ	20.7	48.3	31.0	33.3	43.1	23.5
	R	3.7	14.8	81.5	14.3	23.8	61.9

* Percentages are calculated with missing responses omitted. Only in the case of question 8 for the regional respondents is this proportion sizeable (22 out of 49 respondents).

Regional respondents indicated that their jobs required normal exchange "often" twice as frequently as did headquarters respondents (33.3% versus 17.5%). They also thought that teleconferencing would be more useful for this communications function, but they were relatively cautious in making that judgement (the largest difference is in the "maybe" category rather than in the "yes" category). Although fewer respondents in both groups indicated that their work often involved emergency decision making, regional respondents again indicated that their job requirements were heavier. Here they also indicated that they found teleconferencing potentially useful far more often than did headquarters respondents (48.9% "yes" as opposed to 25.5%).

A slightly different pattern emerges for rapid feedback. Job requirements appear to be approximately equal for the regional and headquarters groups, but the regional respondents indicate that they thought teleconferencing to be potentially useful almost twice as often as did the headquarters sample (42.2 percent "yes" versus 22.4%). While slightly fewer of the regional respondents indicate a heavy involvement with the transmission of experience, far more of them indicate that they perform this function "at times" (78.3% versus 47.4%). The difference in their judgements as to the potential utility of teleconferencing in these kinds of tasks is striking. 48.9 percent of the regional respondents felt that teleconferencing would be useful, while only 16.7 percent of the headquarters respondents felt the same way.

The responses to questions regarding the tasks discussed above indicate that regional respondents perceive their jobs as requiring more communications involvement, and they are more positively disposed to the potential utility of teleconferencing in accomplishing those tasks. However, for inter-departmental information exchange and decision making, there appears to be little difference between the responses of headquarters and regional personnel, although clearly, perceived utility ("yes" responses) are somewhat more frequent for the regional respondents. The one item that does not fit with this overall picture is that concerning intra-departmental coordination. Regional staff perform this task relatively less often and are less convinced that teleconferencing will aid in its performance. The greatest difficulty here is the high percentage of non-responses not included in Table 5.9. Twenty-two out of 49 respondents in the regional survey (44.9%) left this item blank. If this response is interpreted to indicate that they have nothing to do with such tasks and therefore cannot judge the usefulness of teleconferencing for it, differences would be more heavily weighted towards a negative response by the inclusion of these people. However, the inclusion of this item is somewhat dubious, since regional respondents would be less likely to be involved at all, since such functions are supposedly performed primarily in Ottawa.

5.4 ATTITUDES TOWARDS TELECONFERENCING

The summary scale for the ten items measuring attitudes towards teleconferencing indicates that the respondents from the regional offices were more favourable towards teleconferencing than were those surveyed in the headquarters sample (a mean of 1.48 for the former and 1.26 for the latter). Responses to the general question on the desirability of introducing teleconferencing (not included in the scale score) show the same result, if only weakly (Table 5.10).

TABLE 5.10

The Desirability of Teleconferencing

	Not Thought	Would Oppose	Worth Study	Mildly Favour	Strongly Favour	Total
Regions	8.5%	4.3	48.9	17.0	21.3	100%
Headquarters	7.0%	3.5	56.1	19.3	14.0	100%

The principal differences between the two groups are that the headquarters respondents are more ambivalent ("worth study"), while the regional respondents are more often strongly in favour of teleconferencing. When we turn to the attitude items, we find that the regional respondents are much more inclined to see teleconferencing as permitting better coordination with regions. Headquarters respondents tend to be less sure. Similarly, regional respondents more often indicated that teleconferencing would not make communications too impersonal.

Headquarters respondents were less inclined to agree that managers would use it, and that sample contains totally managers. Once again, the headquarters respondents are more inclined to indicate that they are "not sure" what the effects of teleconferencing will be. Understandably, regional respondents are unsure as to whether teleconferencing would permit better coordination with Ottawa, although they include proportionately fewer negative responses and more positive responses. Headquarters respondents were far less sure that people in their departments would be receptive and they were very much more likely to indicate that there were too many meetings and that teleconferencing would only make things worse.

Headquarters respondents were even relatively reluctant to indicate that teleconferencing would save travel time and they were somewhat more likely to indicate that teleconferencing would not save on overall costs. They were much more concerned that teleconferencing would be negatively received because people like to travel and they were more inclined to discount teleconferencing's usefulness because of external contacts (presumably, who would not have access). In short, they were far more likely to see possible problems with teleconferencing and to maintain a neutral posture than were the regional respondents whose attitudes were generally more positive. This may be a function of the different make-up of the two samples. The greater responsibilities of many of the headquarters sample may lead them to be more critical and more cautious.

TABLE 5.11
Attitudes Towards Teleconferencing

Attitude Statement	Headquarters			Regions		
	% Agree	% Not Sure	% Don't Agree	% Agree	% Not Sure	% Don't Agree
Permit better coordination with regions	39.0	57.6	3.4	69.6	28.3	2.2
Would make communications too impersonal	40.7	42.4	16.9	14.9	23.4	61.7
Managers would use it	40.7	55.9	3.4	66.0	27.7	6.4
Needed to permit better coordination in Ottawa	22.0	61.0	16.9	26.8	70.7	2.3
People in my department would be receptive	37.3	59.3	3.4	63.0	30.4	6.5
Too many meetings; teleconferencing would make it worse	52.5	33.9	13.6	2.2	15.2	82.6
Save travel time	67.8	20.3	11.9	83.0	8.5	8.5
Save overall costs	32.2	49.2	18.6	34.0	57.4	8.5
Would be unpopular; people like to travel	40.7	45.8	13.6	14.9	42.6	42.6
Use limited; contacts mostly external	28.8	33.9	37.3	16.7	22.9	60.4

5.5 CORRELATES OF ATTITUDES TOWARDS TELECONFERENCING

The relationship between management level and perceived communication requirements for one's job is stronger in the headquarters sample, with more senior managers indicating greater requirements in both samples. Although weaker results are obtained for the potential usefulness of teleconferencing in the headquarters sample, middle managers score lowest in the regional sample. Parallel results are obtained for the regional sample on the attitude scale with the senior managers again scoring highest and the middle managers lowest. The differences are not significant. However, while the difference between management levels of respondents in attitude scores for the headquarters sample is also not significant, it is in the opposite direction. Senior managers indicate less positive attitudes towards teleconferencing in the headquarters sample.

TABLE 5.12

Management Level and Communication Requirements (CR), The Potential Utilities of Teleconferencing (PUT), and Attitudes Towards the Introduction of Teleconferencing (ATIT).

Management Level	f	Headquarters			f	Regions		
		X CR	X PUT	X ATIT		X CR	X PUT	X ATIT
Senior	12	1.07	1.06	1.14	4	1.03	1.22	1.68
Middle	46	.68	.87	1.30	5	.90	.90	1.24
Lower					38	.80	1.07	1.49
Missing	<u>1</u>	—	—	—	<u>2</u>	—	—	—
TOTAL	59	.77	.91	1.26	49	.83	1.06	1.48
T		3.74	1.24	1.52	F	1.23	.58	2.01
					eta ²	.05	.03	.08
					F	.01	1.11	3.92

The correlates of ATIT, CR and PUT for both samples are reported in Table 5.13. Overall, there are few differences between the two samples and neither of them exhibits either individual characteristics or meeting characteristics which are particularly highly correlated with any of the aspects of attitudes towards teleconferencing. The only possible exceptions to this are the correlations between management level and communications requirements (CR) for the headquarters sample, and the correlation between protocol and CR for the regional sample.

TABLE 5.13

Correlates of Teleconferencing Attitudes

	Attitudes (ATIT)		Communications Requirements (CR)		Teleconferencing Utility (PUT)	
	HQ	R	HQ	R	HQ	R
Respondents age	.04	-.08	-.08	.05	-.06	-.15
Management level	.20	-.04	-.45	-.23	-.16	-.03
Meeting size	.12	-.16	-.10	.10	-.04	-.00
Meeting urgency	.05	-.01	.07	-.17	-.02	.09
Conferees known	.16	.00	.20	-.04	.05	-.09
Meeting protocol	.02	.07	.07	-.36	.07	-.03
Meeting agenda	-.21	.22	-.22	-.13	-.19	.22
% Visuals	-.25	-.00	-.16	.20	-.16	.21
Corridor discussions	.28	.15	-.18	-.11	.05	.08
Others reactions	.12	.33	.03	-.11	.22	-.16
Side comments	.05	.19	.15	.01	.23	-.05
Contacts	-.25	.01	.21	-.07	.27	-.10

However, there are several instances in which the correlations within samples, even while they are not significantly different from zero themselves are significantly different from one another. In the headquarters sample both greater informality in meeting agenda and meeting protocol are correlated with more negative attitudes towards teleconferencing. In the regional sample, the opposite is true. Informality in meeting agenda and protocol is associated with positive attitudes towards teleconferencing. From this it might appear that only the headquarters respondents see a sacrifice in informality involved in the adoption of teleconferencing technology. This interpretation is supported by the headquarters sample's more negative responses to the attitude item dealing with the impersonality of teleconferencing.⁵

⁵ Note that this difference in relationships is not true of need. Differences there are not significant at the .05 level.

Headquarters respondents who participated in meetings where there was more extensive use of visual materials tend to take a more negative attitude towards teleconferencing and see less utility in its introduction. On the other hand, regional respondents who report higher involvement with visual materials tend to have more positive attitudes towards teleconferencing and see greater utility in its introduction. While none of these four simple correlations are significantly different from zero, the correlations for the regional sample are significantly different from those for the headquarters sample in each instance. Once again, the heavy use of visuals only appears to be a problem for teleconferencing potential in the headquarters sample who are less in favour anyway.

There is also a significant difference between the correlation of the importance of observing the reactions of others with perceived potential utility of teleconferencing (PUT). Again, the headquarters sample tends to see a greater importance of such observations associated with lower PUT, while the opposite is true of the regional sample. However, in this case the relationship with ATIT is the same in both samples, although it is much stronger for the regional respondents. Regional respondents who view the observing of others reactions as important are more likely to have negative attitudes towards teleconferencing ($r = .33$). There is something of the same influence in the correlations of the importance of side comments and contacts. Their importance is positively related to attitudes towards the utility of teleconferencing (PUT) in the headquarters sample and negatively related in the regional sample, although none of the correlations are significantly different from either zero or each other (comparing samples).

Table 5.14 deals with the relationship between perceived changes in communications habits and ATIT, CR and PUT. There is little difference in the way in which headquarters and regional respondents are distributed on the question concerning changes in communications habits. In each sample a sizeable minority could not clearly see the changes that might be caused, but the regional sample tended to see no changes a little more often than did the headquarters sample. An examination of the correlations in Table 5.14 indicates that only in the case of the relationship between change and perceived usefulness is there a significant difference between the two samples and that correlation is in a direction consistent with the others. Those who are negative towards teleconferencing are somewhat more likely to see changes resulting from its introduction.

TABLE 5.14
Teleconferencing and Perceived Changes in Communications Habits

		Yes	Percent Don't Know	No
Change	Regions	63.0	17.4	19.6
	Headquarters	63.2	26.3	10.5
<hr/>				
		(CR)	Correlations (PUT)	(ATIT)
Change	Regions	-.14	-.30	-.36
	Headquarters	-.06	.00	-.22

CR = Communications requirements

PUT = Potential Utility of Teleconferencing

ATIT = Attitudes Towards Introducing Teleconferencing

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8. ABSTRACT:

A questionnaire survey was conducted in the regional offices of the Department of Communications in the summer of 1974 to determine the attitudes and perception of managers towards the installation and usage of an audio teleconferencing system. These data were compared with results obtained from a previous survey conducted at headquarters. The following results were obtained:

- 1) regional respondents indicated more positive attitudes towards the introduction of teleconferencing than headquarters respondents;
- 2) the perceived need and utility of teleconferencing facilities were higher in the regions than those reported by headquarters respondents;
- 3) respondents of both samples do not perceive the possible effects of this medium on communication behavior;
- 4) both samples indicated a need for audio-graphics or audio-visual facilities to conduct their meetings.

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