TELECONFERENCING APPLICATIONS IN MARKETING: A SURVEY OF USERS

By

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Scope and Method: The purpose of this study was to examine how teleconferencing is being used in a marketing capacity and to determine whether teleconferencing is a viable tool for improving business efficiency and communications. The data for this study were collected by distributing a questionnaire to teleconferencing users which was designed to measure these characteristics. The data were analysed using frequency and correlation coefficient analyses.

Findings and Conclusions: Marketing uses in teleconferencing are fairly standardized. Teleconferencing is used by marketers to introduce new products and disseminate information. Users believe teleconferencing reduces travel time and costs, but have not been able to quantify their savings. Finally, in the user's opinion teleconferencing is a viable tool for improving business efficiency and communications.

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TELECONFERENCING APPLICATIONS IN MARKETING:
A SURVEY OF USERS

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I. INTRODUCTION

Successful uses of teleconferencing are numerous. For example, since 1968 Bank of America has been using a high-quality audio conferencing system to connect executives in their San Francisco and Los Angeles offices; since 1975, IBM has had its own in-house system for still-video conferencing; and since 1981, Aetna Life and Casualty Company has used full motion video conferencing to link its offices in downtown Hartford and Windsor, Connecticut (Johansen and Bullen, 1984).

The following paragraph by Cowan (1984) exemplifies teleconferencing's current state:

> Even though teleconferencing has been with us for many years, widespread interest has only recently developed. There is no single source of information that covers all the aspects of teleconferencing. The state-of-the art is changing both in the area of technology and in the understanding of the human factors. Much like any other area of mediated communication, successful teleconferencing is both a science and an art. (p.265).

As the United States moves from an industrial to an information based society, the demand for spontaneous communication will accelerate the acceptance and implementation of teleconferencing facilities throughout the business community. Some of the advantages of telecommunications include immediate communication, savings through a reduction in travel costs, a reduction in travel and increased meeting effectiveness.

This study attempts to identify how teleconferencing is being used in a marketing capacity and whether teleconferencing is a viable tool for improving business efficiency and communications.

II. LITERATURE REVIEW.

Johansen and Bullen (1984, p.164) defined teleconferencing as: "interactive group communication through any electronic medium." Other teleconferencing terms which must be defined in order to have a working vocabulary in the area include:

> audiographics - an audio-conferencing system with the capability of remotely controlling graphic equipment. Included in the category would be remote control slide projectors, telewriters, and electronic blackboards. Computer conferencing - a sophisticated electronic mail system which enables participants to discuss task related information. Computer conferences support a variety of functions, such as voting, which assist users in reaching decisions more effectively. (Cowen, p.274, 1984).

For simplicity we will define audio conferencing as interactive voice communication through any electronic medium and video conferencing as interactive image communication through any electronic medium (Johansen and Bullen, 1984).

Cowan (1984) best described audio and video conferencing as follows:

> In audio conferencing participants telephones or speaker telephones are electronically linked so that all participants can hear one another. In video conferencing regular television cameras and televsion sets are used to provide a television image which approximates what one would see on a home television set. (p.46).

One important difference among various forms of teleconferencing is the time element. A teleconference may be either synchronous or asynchronous. Johansen and Bullen defines these terms as follows: "if all participants are present simultaneously regardless of location or time zone, the conference is synchronous; if participants can check into the conference as they wish, it is asynchronous." (Johansen and Bullen, p.165, 1984).

Some misconceptions about teleconferencing use which Johanson and Bullen note are high levels of use, travel substitute, and substitute for face-to-face meetings. With regards to high usage, the authors' explain that the industry's flurry of brochures, and speeches creates the impression of more activity than really exists. Similarly, the travel substitution premise seems to be extremely weak. In the authors' ten years of experience few examples of direct travel substitution can be found. Finally, addressing the misconception of teleconferencing as a substitute for face-to-face meetings, Johanson and Bullen (1984, p.166) said "many users fail to grasp the full potential of the new technology and try to create teleconferencing systems in the image of face-to-face communication."

Hansell and Green (1982) conducted a study to identify benefits perceived by corporate users of videoconferencing. Five areas were specifically studied: travel, amount of communications, resource accessibility, visibility, and meeting effectiveness.

Two of the travel related questions posed to organizational managers were: "Did you expect to see a change in the amount of time spent traveling?" and "Did you expect to see a change in travel expense?" In both cases managers indicated that they had indeed held expectations of a decrease in travel time and a reduction of travel expense. However, respondents were unable to quantify their time and travel cost savings (Hansell and Green, 1982).

The amount of communication enhanced by teleconferencing was another area studied by Hansell and Green.

> One of the outcomes most sought by organizations through videoconferencing is an increase in the amount of communications among managers and professionals within the organization. (p.319).

In Hansell's and Green's study they reported that eight out of ten managers expected an increase in the amount of communication among managers and professionals within the organization. This increase in communication came in the form of increases in frequency of meetings and numbers of people involved in the meeting.

Resource accessibility is another characteristic which Hansell and Green attempted to measure. In the authors' survey all but one manager anticipated an increase in accessibility to people resources while in meetings.

Managers were also asked what effect teleconferencing had on their personal visability. According to the survey, a majority of the managers felt an increase in visability.

Many of the organizations studied had informally surveyed their users on whether or not teleconferencing had been an effective way to conduct a meeting. As was the case with personal visability, the majority of managers surveyed felt that teleconferencing increased meeting effectiveness (Hansell and Green, 1982).

In a somewhat similar survey as Hansell's and Green's, Birrell and Young (1982) studied the effects of teleconferencing on improving group decision making. The major findings were: teleconferencing reduces the interpersonal aspects of discussion; participants are more compromising; teleconferencing reduces meeting length; teleconferencing mediums had no measurable effect on the communication process (neither a benefit or detriment); and participants are less likely to pass judgments about others over an electronic medium (Birrell and Young, 1982).

Harkness and Burk (1982) conducted an extensive survey on teleconferencing as a travel substitute. Major findings in the study were that the average teleconferencing meeting lasts only 1.5 hours versus the average face-to-face meeting which lasts 3 hours, teleconferencing requires the use of more visual aides, and teleconferencing reduces the time lost in business day hours due to traveling. The authors estimated that approximately 9 business hours are lost in the typical business trip.

The decision to use teleconferencing can also be effected by its cost. For example, should your organization lease or purchase the teleconference equipment and facilities? The advantages of leasing would be the ability to forego a large initial investment. The monthly lease payments are considered business expenses versus a capital asset if you were to purchase the equipment outright. The advantages of purchasing includes the ability to use the equipment when and wherever you want to use it, whereas in a lease situation you may not always have this flexability.

According to Kullen (1984), hotel chains such as Holiday Inn, Marriott, and Hilton offer teleconference services and facilities for as little as $16,000 or $30 a person. These same services are also available through nonprofit organizations such as the Public Service Satellite Consortium.

A video conferencing system can be quite expensive. For example, a satellite dish will cost around $3,000, cameras and monitors $100,000 to $150,000, picture processor and video reception equipment $150,000 to $230,000, and various other equipment needed to complete the communication system $150,000 to $750,000 (Kullen, 1984).

Obviously from the preceding discussion there are many benefits of teleconferencing. However, there are some problem areas which must be considered. Since teleconferencing is a "new technology," problems in transmission are often encountered by users. Due to the use of electronic signals

being transmitted over telephone lines or through satellites, delays and interruptions in transmission are likely to occur. Wolf(1982) states that these transmission delays or interruptions can result in a breakdown of a group's communication process. These breakdowns come in the form of lost information, mutual silences, and awkward pauses.

The decision to use or not to use teleconferencing can best be summed up by the following:

> "Teleconferencing has the potential to change not just meetings but business communication in general. The guiding questions should be: What might the medium allow us to do that we cannot do now? The companies that take this question seriously will be the ones that exploit its great promise. Potential users must determine their requirements, understand their needs, and design a system to suit those needs."(Johansen and Bullen, p.164, 1984).

III. METHODOLOGY

The purpose of this study is to investigate the usage of teleconferencing in business organizations. More specifically it will investigate how teleconferencing is being used in a marketing capacity. Also examined in the study were the effects of teleconferencing on the effectiveness of meetings, individual and group participation in meetings, and reduction of travel costs and time. The methodology of the study involved designing a questionnaire, designing a cover letter to attach to the questionnaire, selecting organizations from the 1984 Teleconferencing Directory (Olgren, 1984), phoning organizations in order to identify the ones that used their

teleconferencing systems in a marketing capacity, distributing a letter and questionnaire to organizations which identified themselves as marketing oriented users, collecting and coding the questionnaire data, and analyzing the results of the data.

Questionnaire Design

The questionnaire was designed to measure the following characteristics (see Appendix A):

1) How long an organization has been using teleconferencing;
2) In what ways is teleconferencing being used in a marketing capacity;
3) How often are the teleconferencing facilities being used;
4) Which forms of teleconferencing are being used;
5) The effect of teleconferencing on meeting length and time spent traveling;
6) Opinions concerning the future of technological communications; and
7) The size and industry of teleconference users.

Three question formats were used. Open-ended questions were used for questions which lend themselves to a number of different answers or specifics about the particular company filling out the questionnaire. Multiple choice questions were used for questions dealing with facts about the organizational uses of teleconferencing. Finally, Likert scales were used for questions dealing with opinions on the uses of teleconferencing.

The questionnaire was designed in three parts. Part one included questions dealing with an organization's use of teleconferencing. This section included both multiple choice and open-ended questions. Part two included Likert scale questions concerning opinions on the uses and future of teleconferencing. Part three included open-ended questions regarding the number of employees, 1984 sales, and the industry in which the teleconference user was categorized.

Sampling

A census of business teleconference users was attempted. Organizations were selected from the 1984 Teleconferencing Directory (Olgren, 1984). Phone calls were placed to identify organizations that used teleconferencing in a marketing capacity. If an organization was identified as a marketing user, then a cover letter and questionnaire was mailed out to that organization. The questionnaire was distributed through the U.S.Postal Service with self-addressed stamped envelopes. If the organization was not using teleconferencing in a marketing capacity, they were not included in the survey.

Analysis

For simplicity the questionnaires were first coded onto Oklahoma State University Fortran Coding Forms and then entered into a SAS (statistical analysis system) program using the Oklahoma State Mainframe IBM system.

The data were initially summarized and reviewed using simple frequency distributions of questions in the questionnaire. This analysis located data errors and presented a rough profile of the data collected.

The data were next analyzed using a chi-square test of two-way frequency tables. The hypothesis of equal proportions of respondents in each cell of the frequency tables was tested. For example, the proportion of organizations who own or rent teleconferencing facilities and the number of hours per week they used the facilities was hypothesized to be equal. If a significant chi-square statistic resulted from the test, the proportions of respondents in each cell of the frequency table were statistically different. Then the frequency table was examined to determine what proportion of owners or renters of teleconferencing facilities used their facilities less than 1 hour a week to 5 hours a week, and so forth.

Lastly, correlation coefficients were calculated on Likert scale questions.

IV. RESULTS

Thirty-eight out of 86 questionnaires mailed were returned from the mailing for a 44% response rate. The 38 respondents represented organizations from a variety of industries. These industries included computer/electronics, petroleum, and health care just to name a few (see Appendix B, table 1). Table 2 lists the organizations participating in the survey. The respondent completing the questionnaire was most typically a telecommunication coordinator (table 3) and table 4 displays the number of employees within respondents organization's.

Tables 5 displays the frequency results for each question. Eighteen percent of the respondents have been using teleconferencing for less than 3 years, 50% for 3 to 5 years, and 32% for more than 5 years. The results of the data also show that teleconferencing users have been: using teleconferencing to introduce new products and sales training (29%), tended to be owners of their own facilities and equipment (92%), and many used their facilities between 1 and 5 hours a week (29%). Many also believe teleconferencing reduces meeting length (50%) but are not sure by how much in terms of minutes or hours per meeting. Respondents, however, did not observe a change in travel cost or time spent traveling due to teleconferencing.

With regards to the Likert scale questions, for generalization purposes strongly agree and agree responses were grouped together (strongly disagree and disagree were similarly grouped). The majority of respondents agreed with

the statements that teleconferencing increased access to human resources (90%) and increased communication among managers and other professionals within the organization (92%). In addition respondents also agreed to the following: executive visability is enhanced through teleconferencing (55%); teleconferencing decreased meeting length (58%); due to increased demand, travel costs will increase in the years to come (45%); teleconferencing increases the frequency of meetings (45%); teleconferencing increases meeting effectiveness (63%); due to occupational specialization, training costs will increase in the years to come (84%); and teleconferencing increases meeting structure (82%).

Many respondents disagreed that teleconferencing is not perceived to be a competitive advantage (60%) and teleconferencing decreased the number of participants at a meeting (87%). Finally, respondents also disagreed that teleconferencing will decrease the communication between dispersed parts of the organization (71%) and teleconferencing use is not a viable tool for improving business efficiency (90%).

An area of particular interest was the type of equipment respondents possess and level of management which use teleconferencing. The study found that 79% used audio conferencing, 47% used audiographics conferencing, 45% used video conferencing, and 24% used computer conferencing. According to the respondents, the level of use by executives, middle management, and lower management was 63%, 95%, and 71% respectively.

To determine the average size (measured in terms of 1984 annual sales) of organization participating in the survey, a mean was computed. Organizations which did not disclose their 1984 annual sales were omitted from the mean calculation. The mean sales of organizations participating in the survey was $8,408,299,552. The median annual sales were $4,074,000,000 and sales ranged from $500,000 to $47,000,000,000. Table 6 presents this detail and table 7 presents the range of respondent's 1984 annual sales.

Chi-square tests and cross-tabulation analyses were conducted on the data. The alpha level for rejection of the null hypothesis that all cells in a cross-tabulation have the same proportion of respondents was selected as $p = 0.05$. Analysis of the data resulted in no significant chi-square tests.

Appendix C, table 8, displays correlation coefficients between the Likert scales. Strong correlations exist between the following: those people who believe that teleconferencing increases access to human resources tend to disagree with the statement that teleconferencing is not a viable tool for improving business efficiency (-.40562); those people who believe teleconferencing use is not a viable tool for improving business efficiency tend to disagree with the statement that teleconferencing is not perceived to be a

competitive advantage (.37769). Those people who agreed to the statement that teleconferencing decreases meeting length tended to disagree that teleconferencing use is a viable tool for improving business efficiency (-.35758) and agree that teleconferencing increases the frequency of meetings (.47217).

Those people who agreed to the statement that teleconferencing increases the structure of meetings tended to agree to the statements that teleconferencing decreases meeting length (.35928) and teleconferencing increases meeting effectiveness (.51783) and disagree to the statement that teleconferencing use is not a viable tool for improving business efficiency (-.37287).

Those people who believe that due to the trend in occupational specialization, training costs will increase in the years to come tend to agree with the statement that due to the increase demand for information, travel costs will increase in the years to come (.43640). Those people who disagreed to the statement that teleconferencing is not a competitive advantage tend to agree to the statement that teleconferencing will enhance executive visability (-.55072). Those people who agreed to the statement that teleconferencing increases communication among managers and other professionals within the organization disagreed to the statement that teleconferencing decreases the number of participants at meetings (-.38739); and those people who agreed that teleconferencing increases meeting effectiveness tended to disagree to the statement that teleconferencing is not a viable tool for improving business efficiency (-.47411).

V. IMPLICATIONS

The results of the study indicate that the majority of teleconferencing users have been users for less than 5 years. These findings agree with Cowan (1984) who describes teleconferencing as being in the 'infant' stages of technology. Marketing uses analyzed in this study suggest that teleconferencing is primarily used for routine communication with sales personnel, new product introductions, and sales training.

The majority of teleconferencing users own their own equipment and facilities and use their facilities between 1 to 5 hours per week. Increase in usage per week will most likely occur due to the attitudes of users towards teleconferencing and the need for immediate information. With the increase in teleconferencing usage, new marketing applications are inevitable.

The most noticeable results came in the areas of travel cost and time savings. It is quite apparent that the majority of respondents believe there are savings in travel cost and time, but the majority have not observed or attempted to quantify these decreases. The findings in this area of the study had strong similarities to the findings in Hansell's and Green's study (1982).

With regards to the correlation coefficients questions, the major similarities are as follows: respondents who believed teleconferencing is a viable tool for improving business efficiency also tend to believe teleconfencing increases access to human resources, teleconferencing is a competitive advantage, and teleconferencing decreases meeting length and increases structure of meetings. Those respondents who believe teleconferencing decreases meeting length also believe teleconferencing increases the structure and frequency of meetings. The implications of the following results are that respondents believe in general that teleconferencing is a business tool which may be used to increase business efficiency, increase structure of meetings, and decrease travel time and costs. These findings are parallel to the findings of Harkness and Burke (1982).

VI. CONCLUSION

The purpose of this study was to examine teleconferencing and in particular how it is being used or may be used in a marketing capacity. The results of this study show that marketing uses by organizations are quite similar, that is, teleconferencing is used to disseminate information, new product information, new product introductions, and sales training.

The cost of teleconferencing (videoconferencing in particular) is still quite prohibitive to many organizations, but as this rapidly changing technology ages, costs will decline resulting in more users and different applications.

Looking into the future one can only expect good things for teleconferencing. Cowen (1984) gives the following warning:

> Teleconferencing is not a technology in search of a problem; it is one approach to human logistics in an organization. Intelligent teleconferencing may not require substantial financial commitments, but it does require common sense and knowing your organization's problems and needs. Teleconferencing is not simply an investment in hardware; it is an investment in human communication - maximizing human potential.(p. 271).

Teleconferencing technology is now a major marketing communication tool. As the cost of teleconferencing decreases, increases in marketing applications are bound to appear.

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APPENDIXES

APPENDIX A

COVER LETTER AND QUESTIONNAIRE

Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078
(405) 624-5064

March 13, 1985

Dear Teleconferencing User:

The enclosed survey concerns how your business uses teleconferencing as a marketing tool. The questionnaire will take just a few brief minutes to complete. Please mail your completed questionnaire back to us in the enclosed return envelope. All responses will be held in the strictest confidence.

The survey was prepared by Bill Cormany. Bill is an MBA student here at Oklahoma State University. This survey is part of his research for his MBA paper. I am serving as his advisor.

My own involvement in teleconferencing is as director of the Marketing Teleconference Consortium -- a consortium of graduate marketing education programs. Essentially, we are doing audio and video teleconferencing between and among academic departments of marketing.

Many companies such as yours are now using teleconferencing to facilitate business communications. To our knowledge, little is known about the marketing uses of teleconferencing in business. That is why I have suggested to Bill that he do this survey. If you would like a general summary of Bill's results, please enclose your business card in the return envelope with your survey or write to me separately.

The success of Bill's research (and the completion of his degree) is very dependent on your assistance. Please respond to this survey promptly.

Sincerely,

Raymond P. Fisk

Raymond P. Fisk
Associate Professor of Marketing
Director, Marketing Teleconference Consortium

(405) 624-5085 or 624-5211

RF:PC

Enclosure

Survey Of Teleconferencing Users

This survey concerns your organization's use of teleconferencing as a business tool. Please respond very carefully to the following questions.

PART 1 : Please indicate your answer by placing an " X " on the appropriate space or fill in the blank to the following statements.

1. How long has your company been using teleconferencing (answer in months or years)?

   _____

2. In what ways does your organization use teleconferencing for marketing activities?

   ____) New product introduction
   ____) Sales training
   ____) All of the above
   ____) None of the above

3. Besides new product introduction and sales training, what other ways could teleconferencing be used in a marketing capacity?

   _____

   _____

   _____

4. Does your organization have its own teleconferencing facilities or do you lease/rent facilities?

   ____) Own
   ____) Lease/rent

5. Which forms of teleconferencing communications does your organization use (check all that apply)?

   ____) Audio
   ____) Audiographic (including facsimile, interactive graphics, and electronic blackboards)
   ____) Full-motion video
   ____) Computer

6. How many hours per week does your organization use teleconferencing facilities?

   ____) Less than 1 hour
   ____) 1 to 5 hours
   ____) 6 to 10 hours
   ___) 11 to 15 hours
   ___) 16 to 20 hours
   ___) More than 20 hours

7. Did the length of the typical business meeting in your organization increase or decrease because of teleconferencing?
   ____) Increase
   ____) Decrease
   ____) No change (if No change skip to question 10)

8. Typical meeting length has changed (increased or decreased) by:
   ____) 0 to 30 minutes
   ____) 31 to 60 minutes
   ____) 61 to 90 minutes
   ___) 91 minutes to 2 hours
   ___) more than 2 hours

9. Was the new time required for decision making a detriment or benefit to your organization?
   ____) Detriment ____) Benefit

10. Have you observed a change in travel costs because of teleconferencing?
    ____) Yes ____) No (if No skip to number 12)

11. How much (if any) did your organization save in travel costs?

    _____

12. Did you see a change in the amount of time spent traveling?
    ____) Yes ____) No (if No skip to number 14)

13. How much (if any) did your organization save in travel time? Express your answer in days per month.

    _____

14. At what level of the hierarchy are the personnel who use teleconferencing on a regular basis (check all that apply)?
    ____) Executives
    ____) Middle Management
    ____) Lower Management

PART 2 : Please indicate your degree of agreement or disagreement with each of the following statements by placing an " X " on the scale below the statement.

SA - STRONGLY AGREE, A - AGREE, N - NEUTRAL, D - DISAGREE, SD - STRONGLY DISAGREE

SA / A / N / D / SD

15. Teleconferencing increases access to human resources in our organization.

    ___/___/___/___/___

16. Teleconferencing increases communication among managers and other professionals within the organization.

    ___/___/___/___/___

SA / A / N / D / SD

17. Using teleconferencing is not perceived to be a competitive advantage in our business community.

___/___/___/___/___

18. Executive visability is enhanced through teleconferencing.

___/___/___/___/___

19. Teleconferencing will decrease the communications between dispersed parts of the organization.

___/___/___/___/___

20. Teleconferencing decreases meeting length.

___/___/___/___/___

21. Due to increased demands for information, travel costs in our organization will increase in the years to come.

___/___/___/___/___

22. The increased use of teleconferencing will reduce business travel in our organization.

___/___/___/___/___

23. Teleconferencing use is not a viable tool for improving business efficiency.

___/___/___/___/___

24. Teleconferencing decreases the number of participants at meetings.

___/___/___/___/___

25. Teleconferencing increases the frequency of meetings.

___/___/___/___/___

26. Teleconferencing increases meeting effectiveness.

___/___/___/___/___

27. Due to the trend in occupational specialization, training costs will increase in the years to come.

___/___/___/___/___

28. Teleconferencing increases the structure of our meetings.

___/___/___/___/___

PART 3 : Please fill in the blank for the following statements.

29. How many employees work for your organization?

_____

30. What is your title within your organization?

_____

31. What is your organization's industry (ie. steel, electronics, financial, etc.)

_____

32. What were your corporate sales for 1984?

_____

Other Comments?

_____

_____

_____

_____

_____

_____

_____

_____

Thank you very much for your assistance!

This survey does not reflect any official policy or statement of Oklahoma State University.

APPENDIX B

FREQUENCY ANALYSIS

Table 1

SAS

INDUST	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
AEROSPACE	2	2	5.263	5.263
ALUMINUM	1	3	2.632	7.895
ARCHITECTURE	1	4	2.632	10.526
CHEMEAROSPACE	1	5	2.632	13.158
COMMUNICATION	1	6	2.632	15.789
COMPUTERS	5	11	13.158	28.947
CONSULTING	1	12	2.632	31.579
ELECTRONICS	1	13	2.632	34.211
ENERGY	2	15	5.263	39.474
FARNEQUIPMENT	1	16	2.632	42.105
FINANCIAL	3	19	7.895	50.000
FOODDISTRIB	1	20	2.632	52.632
FUTUREEXCHANGE	1	21	2.632	55.263
HEALTHCARE	2	23	5.263	60.526
INSURANCE	4	27	10.526	71.053
MANUFACTURER	1	28	2.632	73.684
NONPROFIT	1	29	2.632	76.316
PETROLEUM	2	31	5.263	81.579
PHARMACEUTICAL	1	32	2.632	84.211
REALESTATE	1	33	2.632	86.842
RETAILING	1	34	2.632	89.474
TELECOMMUN	2	36	5.263	94.737
TRANSACTIONPROC	1	37	2.632	97.368
UTILITY	1	38	2.632	100.000

Table 2

ORGANIZATIONS PARTICIPATING IN SURVEY

1. ALCOA
2. ALLSTATE INSURANCE COMPANY
3. ABBOTT LABORATORIES
4. AMERICAN COMMUNICATION SERVICES
5. AT&T COMMUNICATIONS
6. ARTHUR ANDERSEN & CO.
7. BANK OF AMERICA
8. AETNA LIFE INSURANCE COMPANY
9. BANKERS TRUST
10. BOEING COMPANY
11. CELANESE CORPORATION
12. CENTURY 21 INTERNATIONAL REAL ESTATE COMPANY
13. THE CHICAGO BOARD OF TRADE
14. DATAPOINT CORPORATION
15. DEERE & COMPANY
16. DIGITAL EQUIPMENT COMPANY
17. FAIRCHILD INDUSTRIES
18. EXXON CORPORATION
19. HERCULES, INC.
20. HONEYWELL, INC.
21. LIBERTY MUTUAL INSURANCE COMPANY
22. LINCOLN NATIONAL CORPORATION
23. MACOM TELECOMMUNICATIONS
24. McDONALD'S CORPORATION
25. J.C. PENNEY
26. NCR CORPORATION
27. MINNESOTA MUTUAL LIFE
28. ROCHE LABORATORIES
29. R.J. REYNOLDS INDUSTRIES, INC.
30. ROLM CORPORATION
31. SKIDMORE, OWINGS & MERRILL
32. SOUTHERN COMPANY SERVICES, INC.
33. SPERRY CORPORATION
34. ST. PAUL COMPANIES, INC.
35. STANDARD OIL COMPANY OF INDIANA
36. SHELL OIL COMPANY
37. TEXAS INSTRUMENTS, INC.
38. U.S. CHAMBER OF COMMERCE

Table 3

SAS

TITLE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
AVPRODUCTIONSPEC	1	1	2.632	2.632
COMMUNICATIONCOO	1	2	2.632	5.263
COMMUNICATIONSYS	1	3	2.632	7.895
COORDINATORCOMMU	1	4	2.632	10.526
COORDINATORTELEC	1	5	2.632	13.158
CORPORATECOMMUNI	1	6	2.632	15.789
DIRECTORTECHNOLO	1	7	2.632	18.421
DISTRICTSALESMAN	1	8	2.632	21.053
MANAGERBUSDEVELO	1	9	2.632	23.684
MANAGERCOMMUNICA	2	11	5.263	28.947
MANAGERMARKETING	1	12	2.632	31.579
MANAGERMEDICALED	1	13	2.632	34.211
MANAGERTELECOMMU	4	17	10.526	44.737
MANAGERVIDIOEDUC	1	18	2.632	47.368
MARKETINGSERVICE	1	19	2.632	50.000
NETWORKCOORDINAT	1	20	2.632	52.632
NETWORKMANAGER	1	21	2.632	55.263
PROJECTMANAGER	2	23	5.263	60.526
SALESPROMOTIONCO	1	24	2.632	63.158
SENIORPROJECTENG	1	25	2.632	65.789
SERVICEREPRESENT	1	26	2.632	68.421
SRCOMMUNICATIONS	1	27	2.632	71.053
STAFFMANAGER	1	28	2.632	73.684
TELECOMMUNICATIO	6	34	15.789	89.474
TELECONFERCOORDI	1	35	2.632	92.105
TELLECOMMUNICATI	1	36	2.632	94.737
VIDIOSUPERVISOR	1	37	2.632	97.368
VPTELEOMMUNICATI	1	38	2.632	100.000

Table 4

SAS

NUMEMP	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	1	1	2.632	2.632
500	1	2	2.632	5.263
700	1	3	2.632	7.895
1000	1	4	2.632	10.526
1319	1	5	2.632	13.158
1500	2	7	5.263	18.421
2000	1	8	2.632	21.053
3000	2	10	5.263	26.316
7000	1	11	2.632	28.947
8000	1	12	2.632	31.579
10000	1	13	2.632	34.211
12726	1	14	2.632	36.842
20000	2	16	5.263	42.105
25000	2	18	5.263	47.368
27000	1	19	2.632	50.000
29000	1	20	2.632	52.632
31500	1	21	2.632	55.263
33000	1	22	2.632	57.895
36000	1	23	2.632	60.526
40000	1	24	2.632	63.158
41000	1	25	2.632	65.789
43000	1	26	2.632	68.421
62000	1	27	2.632	71.053
65000	1	28	2.632	73.684
67000	1	29	2.632	76.316
80000	2	31	5.263	81.579
89000	1	32	2.632	84.211
93000	1	33	2.632	86.842
97000	1	34	2.632	89.474
170000	1	35	2.632	92.105
206800	1	36	2.632	94.737
300000	1	37	2.632	97.368
400000	1	38	2.632	100.000

Table 5

SAS

LONGUSE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
12	1	1	2.632	2.632
18	1	2	2.632	5.263
24	3	5	7.895	13.158
26	1	6	2.632	15.789
30	1	7	2.632	18.421
36	7	14	18.421	36.842
48	6	20	15.789	52.632
52	1	21	2.632	55.263
60	6	27	15.789	71.053
72	3	30	7.895	78.947
120	2	32	5.263	84.211
180	2	34	5.263	89.474
240	3	37	7.895	97.368
600	1	38	2.632	100.000

WHATUSE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	8	8	21.053	21.053
2	4	12	10.526	31.579
3	11	23	28.947	60.526
4	15	38	39.474	100.000

OWNRENT	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	35	35	92.105	92.105
2	3	38	7.895	100.000

AUDIO	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	8	8	21.053	21.053
1	30	38	78.947	100.000

AUDIOGRA	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	20	20	52.632	52.632
1	18	38	47.368	100.000

FULLMO	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	21	21	55.263	55.263
1	17	38	44.737	100.000

COMPU	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	29	29	76.316	76.316
1	9	38	23.684	100.000

Table 5 Cont.

SAS

HOURSUSE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	4	4	10.526	10.526
2	11	15	28.947	39.474
3	3	18	7.895	47.368
4	6	24	15.789	63.158
5	5	29	13.158	76.316
6	9	38	23.684	100.000

MEETLGTH	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	1	1	2.632	2.632
2	19	20	50.000	52.632
3	18	38	47.368	100.000

MEETCHG	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	19	19	50.000	50.000
1	9	28	23.684	73.684
2	5	33	13.158	86.842
3	3	36	7.895	94.737
4	1	37	2.632	97.368
5	1	38	2.632	100.000

VALUECHG	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	23	23	60.526	60.526
2	15	38	39.474	100.000

CHGCOST	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	11	11	28.947	28.947
2	27	38	71.053	100.000

TRAVCOST	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	34	34	89.474	89.474
11000	1	35	2.632	92.105
20000	1	36	2.632	94.737
50000	2	38	5.263	100.000

SAVETRAV	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	11	11	28.947	28.947
2	27	38	71.053	100.000

Table 5 Cont.

SAS

MUCHAVE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	31	31	81.579	81.579
1	1	32	2.632	84.211
3	1	33	2.632	86.842
5	1	34	2.632	89.474
6	1	35	2.632	92.105
7	1	36	2.632	94.737
15	1	37	2.632	97.368
50	1	38	2.632	100.000

EXEC	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	14	14	36.842	36.842
1	24	38	63.158	100.000

MIDMAN	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	2	2	5.263	5.263
1	36	38	94.737	100.000

LOWMAN	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	11	11	28.947	28.947
1	27	38	71.053	100.000

ACCESS	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	20	20	52.632	52.632
2	14	34	36.842	89.474
3	2	36	5.263	94.737
4	2	38	5.263	100.000

COMMMAN	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	17	17	44.737	44.737
2	16	33	42.105	86.842
3	4	37	10.526	97.368
4	1	38	2.632	100.000

COMPAD	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	1	1	2.632	2.632
2	7	8	18.421	21.053
3	7	15	18.421	39.474
4	18	33	47.368	86.842
5	5	38	13.158	100.000

VISABLE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	7	7	18.421	18.421
2	14	21	36.842	55.263
3	13	34	34.211	89.474
4	3	37	7.895	97.368
5	1	38	2.632	100.000

Table 5 Cont.

SAS

DECOMM	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	2	2	5.263	5.263
2	3	5	7.895	13.158
3	6	11	15.789	28.947
4	11	22	28.947	57.895
5	16	38	42.105	100.000

DEMEET	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	3	3	7.895	7.895
2	19	22	50.000	57.895
3	11	33	28.947	86.842
4	4	37	10.526	97.368
5	1	38	2.632	100.000

INCINFO	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	4	4	10.526	10.526
2	17	21	44.737	55.263
3	10	31	26.316	81.579
4	7	38	18.421	100.000

TELETRAV	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	5	5	13.158	13.158
2	12	17	31.579	44.737
3	12	29	31.579	76.316
4	8	37	21.053	97.368
5	1	38	2.632	100.000

TELETOOL	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
2	1	1	2.632	2.632
3	3	4	7.895	10.526
4	11	15	28.947	39.474
5	23	38	60.526	100.000

PARTMEET	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
2	2	2	5.263	5.263
3	3	5	7.895	13.158
4	21	26	55.263	68.421
5	12	38	31.579	100.000

INCFREQ	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	4	4	10.526	10.526
2	13	17	34.211	44.737
3	12	29	31.579	76.316
4	9	38	23.684	100.000

Table 5 Cont.

SAS

INCEFF	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	10	10	26.316	26.316
2	14	24	36.842	63.158
3	12	36	31.579	94.737
4	2	38	5.263	100.000

INCTRAIN	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	6	6	15.789	15.789
2	26	32	68.421	84.211
3	5	37	13.158	97.368
4	1	38	2.632	100.000

INCSTRUC	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	9	9	23.684	23.684
2	22	31	57.895	81.579
3	6	37	15.789	97.368
4	1	38	2.632	100.000

Table 6

SAS

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
SALES	29	8408299551.72	10981492008.9	500000.00000	47000000000

STD ERROR OF MEAN	SUM	VARIANCE	C.V.
2039211872.3	243840687000	1.205932E+20	130.603

Table 7

SAS

SALES	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	9	9	23.684	23.684
500000	1	10	2.632	26.316
8687000	1	11	2.632	28.947
67500000	1	12	2.632	31.579
300000000	1	13	2.632	34.211
500000000	1	14	2.632	36.842
890000000	1	15	2.632	39.474
1000000000	1	16	2.632	42.105
1200000000	1	17	2.632	44.737
2700000000	1	18	2.632	47.368
3000000000	2	20	5.263	52.632
3100000000	1	21	2.632	55.263
3300000000	1	22	2.632	57.895
4000000000	1	23	2.632	60.526
4074000000	1	24	2.632	63.158
4400000000	1	25	2.632	65.789
5000000000	2	27	5.263	71.053
6000000000	1	28	2.632	73.684
9000000000	1	29	2.632	76.316
10000000000	2	31	5.263	81.579
12900000000	1	32	2.632	84.211
14000000000	1	33	2.632	86.842
15400000000	1	34	2.632	89.474
21000000000	1	35	2.632	92.105
22000000000	1	36	2.632	94.737
35000000000	1	37	2.632	97.368
47000000000	1	38	2.632	100.000

APPENDIX C

CORRELATION COEFFICIENTS

Table 8

CORRELATION COEFFICIENTS

	r	p
Not a viable tool * Increase access to human	-.40562	.0115
Not a viable tool * Not competit. advant.	.37769	.0194
Decreases meeting * Not a viable tool	-.35758	.0275
Decreases meeting * Increases frequency	.47217	.0028
Increases structure * Decreases meeting	.35928	.0267
Increases structure * Not a viable tool	-.37287	.0211
Increases structure * Increases effectiveness	.51783	.0009
Increases commun. * Decreases participants	-.38739	.0163
Does not incr. visab * Not competit. advant.	-.55072	.0003
Not a viable tool * Increases efficiency	-.47411	.0026
Increase information * Increases training	.43640	.0062

VITA

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