An Assessment of an Electronic Meeting Center

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ABSTRACT

This article reports evaluation of the effectiveness of an electronic meeting center (EMC) implemented in the headquarters of a multi-billion dollar corporation. Users' perceived effectiveness of the EMC and satisfaction with the meeting process are both better than that of traditional meetings. Task effectiveness and user satisfaction are highly correlated. When participants feel less stressful during the meeting they produce more ideas in less time. Furthermore, the ease of use of the computer is also correlated with more ideas generated in less meeting time. As the size of the group increases, the cohesiveness of the group decreases but the task effectiveness increases. More ideas are generated as the size of the group increases. However, the quality of ideas does not appear to have any relationship with the number of participants in a meeting. Participative-oriented executives perceive high value of the EMC and appreciate the contributions of subordinates in the decision making process while authoritative-oriented executives tend to reject the use of EMC.

INTRODUCTION

People have been gathering together in meetings to make decisions and to solve problems since the dawn of civilization. General managers spend 30 to 60 percent of their time in meetings and the comparable figure for technical managers is 40 to 70 percent [11]. Peter Drucker [3] also points out a strong trend toward the use of business teams in organizations. Teams are likely to continue to be one of the primary vehicles for carrying out work in organizations because, although an organization is a collection of individuals, its functioning depends on groups of people working together to achieve common goals. How to improve organizational productivity has become a critical issue in today's business world, where enhancing team productivity through the application of computers and communication technologies provides an opportunity for improving organizational performance and effectiveness.

Many research projects in the past decade have been devoted to designing and implementing information technology to support collaborative work, to studying the impact of Group Support Systems (GSS) on organizations, and to understanding how to use GSS effectively to improve team productivity [1,2,4,6,7,8,9,16,17]. A majority of the research effort is devoted to laboratory experiments. Nunamaker and his colleagues' work on the IBM experiences and at other field settings are exceptions [e.g., 5,10,12,15]. Pinsonneault and Kraemer [14, p.197] point out "there is a need to move away from laboratory settings to field study in organization settings, with 'real' managers." The objective of this article is to report a case study conducted at a field setting where an electronic meeting center (EMC) was introduced and used to facilitate group meetings.

BACKGROUND

The organization involved in this study is one of the world's leading hospitality companies, headquarters located in the Washington, D.C. Metropolitan area, with annual sales around $8 billion. The company, which began as a small root beer stand in Washington, D.C., today has over 3,800 units, with operations and franchises in 50 states and 21 countries. It has more than 200,000 employees and serves more than four million meals a day.

In order to investigate the value and utility of emerging electronic meeting support environment for this corporation, a pilot facility, referred to as an Electronic Meeting Center (EMC) hereafter in this article, was established at the headquarters in September 1991. The meeting room, that is not very different from any other traditional meeting rooms, has ten networked 386 PC workstations arranged in a U-shape configuration, and a laser printer, located in the center of the U, providing immediate quality meeting outputs either on paper or transparencies. Transparencies can be projected on a white wall for group viewing and discussion through an overhead projector.

Several features of the EMC distinguish it from other group decision centers. First, each workstation is named after a musical instrument (e.g., drum, clarinet, trombone, flute, violin, xylophone) and the coordinator workstation, located at one end of the U, is named "conductor." As described in the EMC briefing, "the conductor is expected to decide which music will be played and when. However, how you play the music will be your choice — reflecting your own style and experience. Like a symphony, each instrument is different — some loud, and others soft, some bold others delicate — each instrument will be heard in this orchestra... adding importance, value and a unique perspective. As with any orchestra, the conductor is responsible for 'leading' and has the ultimate responsibility for determining the direction the orchestra will take." This musical analogy is a unique design feature that differentiates EMC from many other similar electronic meeting facilities.

Another feature of the EMC contributes to the atmosphere of the meeting environment. Wall hangings are used to stimulate creativity and encourage participants to think from different perspectives by suggesting "the group leader makes decisions based on group input," "computers enhance not replace the meeting focus," and "submit your ideas wearing different hats but wear one at a time. Hats might include identification as customer, legal advisor, finance officer, travel agent, associate/employee, the competition, the boss, the boss's boss, peers, marketing/sales, vendor, meeting planner."

In addition, a standardized meeting process was designed to minimize the amount of training required for EMC participation by limiting the number of computer tools used. The groupware installed on the local area network is VisionQuest™ from Collaborative Technologies Corporation of Austin, Texas, which consists of several group tools that facilitate generating, collecting, analyzing, communicating, and synthesizing information and ideas generated by groups during meetings (at any time and any place). Two tools, a brainstorming tool and a rating tool, were used to facilitate face-to-face meetings conducted in the EMC.

THE STUDY

A meeting can be broadly defined as "any activity where people come together, whether at the same place at the same time, or in different places at different times" [12]. Meetings conducted at the EMC in this study are all face-to-face meetings supported with VisionQuest™. In this study, we emphasize the outcome measures of the meetings conducted at the EMC. The outcome of the electronic meetings is evaluated by perceived effectiveness along three dimensions: (1) task effectiveness (i.e., task-related outcome), (2) satisfaction with the meeting process (i.e., group-related outcome), and (3) the willingness to use the EMC again for

conducting future meetings. Task effectiveness was measured relative to traditional meetings (i.e., non-computer-mediated meetings) in terms of: quality of ideas generated, quantity of ideas generated, time needed to generate ideas, and time needed to prioritize ideas. Satisfaction with the meeting process was measured in terms of user satisfaction and group cohesiveness. User satisfaction was measured by the level of comfort in expressing ideas in the meeting, the level of perceived stress during the meeting, and ease of use of the computer. Group cohesiveness was measured by the degree of "feeling part of the group" and how well group members work together.

To evaluate the EMC effectiveness, we conducted an in-depth study of meetings held in the EMC facility between September 19, 1991 and November 14, 1991 (N=34). Data were collected through multiple means: direct observations, in-depth interviews, and post-meeting questionnaires. The objective of direct observations was to learn about the corporate culture, group interactions and dynamics, and meeting processes, while the objective of personal interviews with some of the team leaders was to obtain an in-depth understanding of meeting tasks, group compositions, established group norms, leadership style, and the meeting leader's reactions to the EMC concept.

The post-meeting questionnaire, consisting of structured and open-ended questions, was designed to capture perceived effectiveness of the EMC. The structured questionnaire, using a 5-point Likert scale, was administered in the form of a paper-and-pencil instrument, having been extracted from validated instruments and tested for reliability. Cronbach's ALPHA values obtained were 0.70, 0.53, and 0.77 for task effectiveness, user satisfaction, and group cohesiveness, respectively, all of which were acceptable [13]. The open-ended question stated, "Think of the computer-assisted part of this meeting. Please tell us what really impressed you? What could be done differently or improved?" This question was administered on-line via the computer. Although all first-time users of the EMC responded to the structured paper-and-pencil questionnaire at the conclusion of their meetings, time constraints prevented asking the on-line, open-ended question at some meetings.

FINDINGS

During the evaluation period, a variety of different meetings were held at the EMC. The group sizes ranged from 3 to 13 individuals. Participants in the EMC meetings represented a wide range of functional areas and held a variety of job titles. The meeting tasks primarily involved idea generation and ratings. However, within this task type, a number of different task domains (e.g., information systems and technology, marketing, and human resources) were addressed in the EMC facility.

Table 1

Descriptive Statistics from the Post-Meeting Questionnaires

Questionnaire Items	Mean	Std Dev	*Percent agreed
Task Effectiveness			
Compared to a "traditional" meeting, it took LESS TIME to GENERATE ideas today	4.76	0.27	96.4
Compared to a "traditional" meeting, MORE IDEAS were generated today.	4.69	0.27	95.8
Compared to a "traditional" meeting, it took LESS TIME to PRIORITIZE ideas today.	4.65	0.38	95.0
Compared to a "traditional" meeting, the QUALITY of the ideas was better today.	4.06	0.41	75.4
User Satisfaction			
Using the computer was easy.	4.55	0.38	89.2
Compared to a "traditional" meeting, I was MORE COMFORTABLE in offering my ideas today.	4.35	0.38	82.6
Compared to a "traditional" meeting, today's meeting was LESS STRESSFUL.	4.34	0.38	80.8
Group Cohesiveness			
The group members worked well together.	4.24	0.34	77.8
In today's meeting, I felt I was a part of the group	4.20	0.40	78.2
Use Again			
I would like to use the EMC again.	4.87	0.12	98.2

Ratings are on a scale of 1–5 (strongly disagree – strongly agree).

*Figures represent the percent of respondents who answered 4 and 5 (agree and strongly agree) to each question.

Table 1 and indicate that the EMC meetings were highly rated in terms of task effectiveness and user satisfaction with the meeting process. Participants in the EMC meetings felt that, compared to traditional meetings, the EMC meetings led to identification of more high-quality ideas and that it took less time to prioritize these ideas. In response to the open-ended question in the post-meeting questionnaire, several participants commented on the speed and efficiency of generating and rating ideas. For example, one respondent commented that "it was quick and very effective in accomplishing our goals." Another stated, "a large number of ideas [were generated] in a short time." Another participant reported that it was a "very fast way to generate ideas."

In addition to the high degree of task productivity evident from the responses, the meeting process itself seemed to be highly effective in comparison with a "traditional" meeting. The participants felt more comfortable in offering their ideas and perceived less stress during the EMC meetings. Furthermore, a high degree of positive team spirit was experienced in the EMC meetings. This finding is consistent with the researchers' observation of group interactions during the meetings. No conflict was observed among the group members and a high degree of group cooperation existed. Moreover, we noticed a high level of participant engagement in the meeting task and high motivation during the EMC meetings. In the post-meeting questionnaire, a number of participants characterized their EMC meetings as enjoyable and "fun." For example, one individual commented that "using the computer made the meeting fun even though we were discussing major topics and how we felt about people." The high level of participant engagement and in-

Table 2

Pearson Correlation Coefficients

Variables	Task Effectiveness	User Satisfaction	Group Cohesiveness	Group Size
Task Effectiveness	1.00	0.71*	***	0.34**
User Satisfaction	0.71*	1.00	0.38*	***
Group Cohesiveness	***	0.38*	1.00	−0.31**
Group Size	0.34**	***	−0.31**	1.00

Note: * = p<0.05;   ** = p<0.1;   *** = no values.

The high level of participant engagement and involvement in the EMC meetings was also brought up by a number of the meeting leaders who participated in the post-meeting personal interviews. For example, one of them mentioned that one of her staff members who is usually uncooperative, quiet, and somewhat negative in regular meetings had acted enthusiastically, cooperatively and rather positively during the EMC meeting.

To further understand the interrelationships among task effectiveness, user satisfaction with the process, group cohesiveness, and group size, the Pearson Correlation was used to analyze correlations between these variables. As indicated by the Pearson Correlation coefficient values in Table 2, it appears that task effectiveness and user satisfaction are highly correlated (0.71, p<0.05). As the size of the group increases, the cohesiveness of the group decreases but the task effectiveness increases. More specifically, the time needed to generate/prioritize ideas was less than that needed during the traditional meetings. More ideas were generated as the size of the group increased. However, the quality of ideas did not appear to have any relationship with the number of participants in a meeting.

We also observed a high level of discussion and information sharing during the EMC meetings. In addition to the exchange of ideas and information electronically through the networked computers, a high level of verbal communication among the meeting participants took place in several meetings. One of the meeting leaders (who was also the group manager) stated that he was impressed by the high level of verbal discussion in the EMC meeting, relative to his regular staff meetings. It is an interesting finding that the electronic communication channels did not seem to replace, but augmented and stimulated, verbal discussions. This may in turn lead to increased information sharing and enhanced group decision making and problem solving. The following comments provided in post-meeting questionnaires support this perspective:

"This method [EMC] is great in expanding the thinking of individuals with ideas;"

"I think this is a great system, quick and easy way to gather data and make decisions;"

"Maximizes the group's mental resources."

Perhaps the best indicator of the success and effectiveness of the EMC facility was the willingness of almost all of the first-time users of the facility to use it again for holding future meetings. When asked if they would like to use the EMC facility in the future, 98.2 percent of the group responded positively.

One EMC user responded to a post-meeting question with the following summary comment:

"The whole concept of computerizing the [meeting] process is excellent. Typing from flip charts is ancient, a total waste of time. We are lucky to be able to have access to a room like this. Like a symphony, everyone plays an important role and needs to be heard. This will help motivate associates to use their true opinions. This is QUALITY."

As of April 14, 1992, the following results have been reported: (1) over 1,600 employees of the corporation and other companies (Federal Express, MCI, Westinghouse, GE, Bell Atlantic, C&P Telephone, Chief Naval Research, etc.) used the EMC; (2) over 180 business meetings were held in the EMC and the Center was occupied 96% of the time for business meetings; (3) users generated in excess of 22,000 ideas/solutions, of which more than 90% were judged to be valuable and useful; (4) users estimated that it would have taken 9–12 times longer to accomplish the same results in a traditional meeting; and (5) annualized savings of over $1,000,000 and 35,000 man-hours were realized.

CONCLUSIONS

Empirical data collected through in-depth interviews, meeting observations, and questionnaires, indicates that participants in the EMC meetings felt that a large number of

high-quality ideas were generated in a relatively short period of time. Groups demonstrated a high degree of cooperation and a high degree of positive team spirit in these meetings. High levels of engagement in the meeting task and information sharing were also observed. Given that managers spend 30 to 70 percent of their time in meetings, EMC productivity gains promise significant improvements in organizational effectiveness and efficiency. That more than 98 percent of participants who have used the center are willing to use it again indicates the level of acceptance of the EMC by its users. We believe that our experience could be useful to other organizations that are eager to try this new technology for improving group meeting productivity and enhancing communications within organizations. A second room will be installed at the corporate headquarters in late 1992, and in the future; meetings conducted at any time and any place will take place, traveling decision centers will be established and made available to serve clients, greater participation is expected from field offices, and the center will become an important tool to support Total Quality Management (TQM).

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