Meeting Facilitation:
Process Versus Content Interventions

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ABSTRACT: This article examines the impacts of two types of meeting facilitation that occur in traditional and GSS environments: process and content facilitation. Based on existing facilitation, leadership, and GSS research, and structuration theory, we articulate hypotheses regarding the impact of GSS use and each type of meeting facilitation on meeting processes and of meeting processes on outcomes. Meeting processes examined in this study included relationship development, participation, issue-based conflict, interpersonal conflict, and negative socioemotional conflict. Outcomes explored were the groups’ satisfaction with the decision made and with their meeting process, and the quality of the groups’ decision products.

Empirical investigation provides the following findings: Process facilitation had a positive impact on meeting processes. Content facilitation had a negative impact on meeting processes. The interaction between GSS use and both process and content facilitation had no significant effect on meeting processes. Meeting processes had a strong positive impact on satisfaction, but no impact on product quality. Implications for meeting facilitation are discussed and future research directions proposed.

KEY WORDS AND PHRASES: group meeting systems, group support systems, meeting facilitation.
Facilitators adopt different styles, play different roles, and perform a variety of functions in group interactions. These styles, roles, and functions have been shown to affect group processes and meeting outcomes [31]. We identify three major facilitator roles: training, process facilitation, and content facilitation. This study examines the impact of the last two facilitator roles. We did not include the training role in our study because we focused on supporting a task-based meeting. In the task-based meeting, the process and content facilitation roles are dominant. When the facilitator is being a trainer, the outcome is learning, not the successful completion of a task.

Facilitation can be an important mediator of success in GSS environments [4]. However, research on facilitation in the GSS environment is still sparse. Thus far, GSS researchers have investigated facilitation as an additive structure [1], the effectiveness of facilitation restrictiveness in GSS environments [16], and the effectiveness of decision guidance provided by GSS [35]. Partridge [44] studied the impact of structurational process facilitation and interactional process facilitation in a GSS environment. Clawson, Bostrom, and Anson [12] identified sixteen dimensions of a facilitator's role within the context of electronic meeting environments. They indicate that research needs to identify the relative importance of roles played by a facilitator.

Eden's [17] view is that both process and content facilitation need to be provided in tandem in order to engineer a successful meeting intervention. Most GSS researchers and practitioners, however, appear to assume that the primary task of a meeting facilitator should be process facilitation [45]. Facilitator involvement in the task content is seen as prejudicial to group outcomes [45]. Content involvement is thus believed to be the purview of the group itself and task leadership the role of the internal leader. Within the context of GSS meetings, it is possible that content facilitation has been neglected because GSS are commonly perceived to be process rather than content tools. All four laboratory studies on facilitation in GSS environments focus on process facilitation [1, 16, 44, 59].

This study examines the effects of process and content facilitation across meeting environments. Process facilitation is defined as the provision of procedural structure and general support to groups through the meeting process [17]. Content facilitation involves interventions that relate directly to the problem being discussed [17]. While content facilitation may be “prejudicial,” several authors see it as an important facilitator role. We draw attention to the leadership literature to help us understand the role of the facilitator. Structuration theory helps us understand the interaction among facilitation, technology support, and meeting structures. Using structuration theory and earlier research on GSS, facilitation, and leadership, we develop a model predicting cumulative effects of GSS use, process training, and facilitation.

Literature Review

Bostrom, Anson, and Clawson [6] define facilitation as "activities carried out before, during, and after a meeting to help the group achieve its own outcomes." They
propose that facilitative behaviors may be exhibited by several individuals in meeting groups—external facilitators, group leaders, or other group members. They identify three major facilitator roles—group training, supporting task content, and supporting the group process (which includes process structuring and supporting interaction among group members). These three roles encompass Clawson, Bostrom, and Anson’s [12] sixteen facilitator dimensions. These facilitator roles, facilitation sources, and the timing of facilitation are summarized in figure 1, along with meeting outcomes of interest to GSS researchers.

GSS researchers have traditionally looked at three types of outcomes from meeting interventions: improvements in the meeting process, groups’ satisfaction with the meeting process and product, and the quality of their product [4, 14, 46]. We chose to focus here on the group’s process as a mediator of group outcomes. We believe that group processes—such as participation, conflict, and relationship development—can modify the impact of interventions such as GSS use and facilitation on groups’ satisfaction and the quality of their product.

The group outcomes of interest in this study are groups’ satisfaction with their decision and process, and their task performance. Satisfaction has been seen as an important outcome in the study of group support systems [46]. Groups’ satisfaction with their decision is critical to the successful implementation of the decision. In laboratory studies of decision-making tasks, where there is no single correct or best solution, group members’ satisfaction with the decision of their group provides a valuable indicator of the group’s success. The group’s satisfaction is likely to influence their confidence in the decision, and their commitment to its successful implementation. However, it is necessary to look at both components of satisfaction—process satisfaction and decision satisfaction—for a holistic picture [14]. How GSS use affects
performance is a critical practical issue for managers [14]. We examine performance in terms of the quality of the groups' final product.

Figure 1 highlights the facilitator roles, sources of facilitation, timing, and impacts of interest in this research. This research focuses on two facilitator roles—assisting groups in employing the prescribed meeting processes and supporting task content. We examine only facilitation provided by an external meeting facilitator and by GSS technology during a group meeting. As shown in figure 1, the facilitation role in real-world groups frequently begins before a meeting and continues after a meeting. The facilitation provided by the external facilitator may be augmented by the interventions from internal leaders. However, since we observed the impacts of facilitation via a laboratory study, facilitation was limited to the duration of the meeting. The study used student groups, who accordingly lacked strong internal leadership, despite the ongoing nature of their interactions. Thus, we focused solely on facilitation provided by the external facilitator.

We explore meeting processes as a mediator of other group outcomes. The outcomes of interest in this research are groups' satisfaction with their meeting process and with their decision, and product quality.

GSS and Facilitation

In most GSS studies, groups have been provided with some level of facilitation. Facilitation in these studies was frequently scripted. The exception is the majority of studies conducted at the University of Minnesota using SAMM, where no facilitation was provided. GSS researchers have recently begun to examine the impact of meeting facilitation on GSS outcome effectiveness. Benbasat and Lim [4] believe facilitation to be a moderator of outcomes of GSS use, but were unable to support this position in their meta-analysis of GSS research. GSS research on facilitation is summarized in Table 1, in which facilitation appears to be a positive intervention in group work. However, the studies differ on whether process facilitation should be flexible or restrictive. The summary of research findings in Table 1 also makes evident the paucity of research on content facilitation.

As indicated above, process facilitation can have two components—process structuring and support for groups' interaction. Wheeler and Valacich [59] explored the roles of training, technology configuration, and process facilitation as mediators of faithful appropriation. Process facilitation provided in this study was simply assistance in structuring the problem-solving process. They found process facilitation to be the strongest mediator of faithful appropriation of the prescribed heuristic. Faithful appropriation of the heuristic was found to result in better-quality decisions. Anson et al. [1] looked at the additive contributions of process facilitation over technology support alone. In this study, process facilitation included process structuring and interactional support for the group. They found additive effects of GSS and facilitation structures on group cohesiveness and group processes used. However, neither facilitation nor GSS use had an impact on group performance. Partridge [44] examined structurational and
<table>
<thead>
<tr>
<th>Study</th>
<th>Technology</th>
<th>Facilitator roles</th>
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<tr>
<td>Wheeler and Valacich [59]</td>
<td>Nonrestrictive GSS versus restrictive GSS</td>
<td>Process facilitation: flexible versus restrictive</td>
<td>Cumulative positive effects of training, facilitation, restrictiveness on faithful appropriation</td>
<td>Cumulative positive effects of facilitation and GSS use on group cohesiveness</td>
<td>Cumulative positive effects of training, facilitation, restrictiveness on decision quality</td>
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<td>Anson et al. [1]</td>
<td>GSS versus manual</td>
<td>Process facilitation: flexible</td>
<td>Cumulative positive effects of facilitation and GSS use on group cohesiveness</td>
<td>Cumulative positive effects of facilitation and GSS use on process satisfaction</td>
<td>No impact on group performance</td>
</tr>
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<td>Dickson et al. [16]</td>
<td>GSS</td>
<td>Process facilitation: flexible (chauffeur-driven) versus restrictive (facilitator-driven)</td>
<td>Flexible facilitation resulted in greater improvements in group consensus than did restrictive facilitation</td>
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<td>Limayen and DeSanctis [35]</td>
<td>GSS with decision guidance versus GSS without decision guidance</td>
<td>Content facilitation (provided by the system)</td>
<td>Decision guidance (content facilitation provided by the system) resulted in improvements in group consensus</td>
<td></td>
<td>Decision guidance (content facilitation provided by the system) resulted in higher amounts of learning</td>
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<td>Partridge [44]</td>
<td>GSS</td>
<td>No facilitation versus structurational process facilitation versus structurational and interactional process facilitation</td>
<td>Structurational process facilitation increased group members' understanding of others' perspectives, depth of evaluation, and consensus; no added benefit from interactional facilitation</td>
<td>Structurational process facilitation improved process and decision satisfaction; no added benefit from interactional facilitation</td>
<td>Structurational process facilitation enhanced learning and decision quality; no added benefit from interactional facilitation</td>
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interactional process facilitation. She found that process facilitation increased group members' understanding of others' perspectives, depth of evaluation, consensus, learning, decision quality, and satisfaction with the process and decision. Interactional support provided no incremental benefit to the meeting process, group satisfaction, or performance over process structuring alone.

Dickson, Partridge, and Robinson [16] examined the impact of two levels of process facilitation on outcomes among GSS users. Process facilitation involved process structuring alone. One set of groups was given technical support alone, while the others were also provided with process support. These researchers found that GSS groups in the technical-support-only condition demonstrated a significantly greater improvement in consensus than those that were also provided with process support. Groups provided with process support also reported that the facilitation impeded their progress on the task.

Dickson et al. [16] explain their findings in the light of the restrictiveness of the support environment and speculate that, because the process facilitation provided was a highly restrictive structure, it did not produce the desired effect. However, Wheeler and Valacich [59] also provided groups with restrictive facilitation, with highly positive results. There are three possible explanations for these differences: (1) groups' appropriation of the facilitated heuristic; (2) consistency of the facilitated heuristic with the needs of the task; (3) outcomes studied across the experiments. Perhaps the heuristic facilitated in the Dickson et al. study was resisted by the groups. Or maybe the heuristic in the Wheeler and Valacich [59] study was more consistent with the needs of the task than was the case in the Dickson et al. [16] study. Finally, since the dependent measures in the Wheeler et al. study were group appropriation of the prescribed heuristic and decision quality, while the dependent measure in the Dickson et al. study [16] was group consensus, the findings of these two studies may not really be comparable.

Eden [17] highlights the need for content facilitation too in meetings supported by GSS. Limayen and DeSanctis [35] used an advanced group support system, with "decision guidance" as a way of providing meeting groups with content facilitation. They found that the guidance provided by the system resulted in higher learning levels and enhanced group consensus. However, no research has hitherto explored the efficacy of content facilitation provided by a human facilitator.

This study focuses on restrictive process facilitation (process structuring only) and content facilitation provided by an external facilitator, rather than by a GSS. We extend earlier work on facilitation that examined the importance of process facilitation on meeting processes, group member satisfaction, and performance, while adding baseline groups that did not use GSS. This enables us to test the relative efficacy of the two types of facilitation across the two meeting environments. Dickson et al. [16] propose that this is an important step for future research on facilitation. We examine variations in the amount of facilitation provided, rather than using the all-or-none approach adopted in earlier research. Most important, we investigate a new facet of facilitation—content facilitation. Finally, we develop and test a causal model that enables us to focus on the mediating role of meeting processes in the facilitation of positive group outcomes.
Meeting Processes

The meeting processes of interest in this study are member relationship development, group conflict, and member participation. These represent three of the five group development factors identified by Chidambaram and Bostrom [9] (the remaining two factors are communication and task-emotion balance). Research on each of the dimensions of group dynamics indicates the importance of their development to member satisfaction and the achievement of task outcomes.

Relationship development, the process of developing group cohesiveness, is important to the development and maintenance of a group identity and synergy, and in the achievement of meeting outcomes. Cohesive groups tend to work harder to achieve group goals, and outperform less cohesive groups [32, 60]. Cohesive groups experience less self-censorship and conflict and are more effective on alternative generation and evaluation [42].

Researchers distinguish between issue-based conflict, targeted at task/content matters, and interpersonal conflict that is targeted at individual group members [40, 48]. Issue-based conflict is critical to meeting success. It preempts meeting hazards such as groupthink [8, 13, 37]. Sambamurthy and Poole [51] found that higher levels of confrontiveness resulted in higher postmeeting consensus. Interpersonal conflict, on the other hand, detracts from the task at hand and results in the use of suboptimal conflict resolution strategies, such as distributive rather than integrative strategies [40].

Participation also is critical to meeting success. Miranda [39] proposes that active and equal participation by group members in the group task can prevent the occurrence of groupthink. Participation is critical to group development [9]. Increased participation and involvement levels enhance the quality of the group solution and promote group acceptance of the adopted solution. However, negative socioemotional participation, like interpersonal conflict, can be detrimental to the welfare of the group [40].

Thus, relationship development, the nature of conflict, and member participation play an important role in the achievement of desirable group outcomes. These three aspects of group dynamics have also received attention in the GSS literature. Several GSS researchers have examined the impacts of meeting technology on group cohesiveness [1, 10]. The studies indicate improved relationship development with GSS use. Others have examined the impact of GSS on conflict [40]. The results suggest that GSS use discourages unproductive interpersonal conflict. Initially, technology-supported groups tended to experience significantly less issue-based conflict as well [40]. However, following successful technology appropriation, increased issue-based conflict was recorded among GSS users [40]. Numerous GSS researchers have investigated the impact of GSS on group participation [25, 27, 54, 57]. These studies indicate more even patterns of group participation with GSS use.

Meeting Outcomes

This study focused on members’ satisfaction with the process and with their chosen solution, and on the quality of groups’ final products. These outcomes are believed to
have considerable practical significance to managers in their deployment of meeting interventions such as GSS [14]. Process satisfaction is necessary for the ongoing health of a group. Decision satisfaction is essential for successful decision implementation.

Research Model and Hypotheses

Traditional meeting structures—that is, modes of action or interaction—are not productive [55]. For example, nonanonymity and monopolization result in meeting and outcome domination by group factions. These structures may not be deliberately employed by groups. Rather, they tend to evolve out of a lack of preparedness, individuals’ pursuit of their own agendas, and ignorance of the consequences of one’s behavior. Meeting interventions typically attempt to promote groups’ appropriation of more productive structures [1]. For example, Hoffman and Maier [28] propose that groups encourage equal participation and influence from their members, and Hall and Watson [26] suggest the adoption of the consensus structure rather than majority vote.

These structures, however, do not occur naturally in group meetings. Giddens [22] proposes that structures can mutually assist or oppose each others’ production and reproduction, resulting in mediated or contradicted interpenetration. With mediated interpenetration, the two structures are complementary, and both continue to exist and reinforce one another. In the case of contradicted interpenetration, one structure is weakened, or ceases to exist, with the strengthening of another.

Attempted appropriation of productive but unfamiliar meeting structures is opposed by structures that have already been appropriated and internalized by groups, resulting in contradicted interpenetration. Both traditional and productive structures cannot coexist. For example, a traditional domination structure cannot occur in conjunction with a more productive equal participation and influence structure. Since nonproductive structures have already been established in the repertoire of group members, appropriation of the new structures is likely to meet with resistance. However, productive meeting structures may be mediated or reinforced by other supporting structures, resulting in mediated interpenetration. Figure 2 presents a model of mediating and contradicting structures of interest in this research.

GSS use can support productive meeting structures, resulting in mediated interpenetration. However, the use of technologies such as GSS does not automatically yield productive structures. DeSanctis and Poole [15] use structuration theory to investigate users’ appropriation of technology, which they define as use that is not “automatically determined by the technology design.” They found that groups may well appropriate GSS unfaithfully, that is, in a fashion not intended by the designers of the technology. Therefore, additional structures may be necessary to promote the mediated interpenetration of productive meeting structures, and contradicted interpenetration of traditional ineffective meeting structures. Training has been found to be highly successful in assisting groups in developing productive meeting structures [21]. As seen above, facilitation also can assist groups in their appropriation of a prescribed heuristic.

Several studies support our expectation of the mediated interpenetration of training,
facilitation, and GSS use. As seen earlier, Anson et al. [1] found an additive effect of facilitation and GSS use on group dynamics and group processes. Reagan-Cirincione [49] found that the combined support provided by modeling, technology, and facilitation improved the accuracy of group judgment. Wheeler and Valacich [59] found cumulative effects of training, GSS configuration, and facilitation on faithful use of the prescribed heuristic.

In this study, we focus on the role of GSS use and two types of facilitation: process and content. Process facilitation is modeled as an additive structure that contributes to the mediated interpenetration of productive meeting structures and the contradicted interpenetration of unproductive meeting structures. Structuration theory therefore suggests that process facilitation will assist in the creation of productive meeting processes. However, process facilitation, combined with GSS use, will be much more effective in combating negative traditional structures and promoting productive ones.

Content facilitation is modeled as a structure that can be mediated by GSS use to enable productive meeting structures. Without the assistance of GSS, we propose that content facilitation will have a detrimental effect on group processes. Visible content interventions by the meeting facilitator are likely to subdue members' participation in the decision-making process. GSS use, however, can permit content interventions from the facilitator, while masking the source of the intervention. In this context, participation by group members will not be suppressed, despite facilitator interventions in the meeting content. We therefore propose that content facilitation, without the benefit of GSS use, is a structure that will contradict the development of productive meeting structures. These premises provide the basis for the hypotheses that follow, and the research model in figure 3.
GSS Use

The use of group support systems has been shown to improve numerous group processes. It improves cohesiveness or groups' relationship development [10]. It results in more equal member participation and influence in the group [58, 61]. It results in lower levels of negative interpersonal conflict [40]. GSS use has also been shown to result in higher levels of groups' satisfaction with the meeting process and outcomes, particularly in the case of larger groups and when the technology has been matched to the task [14]. GSS use results in improved decision quality [14]. We therefore propose the following hypotheses:

$H1$: GSS use will result in improved meeting processes.

$H2$: GSS use will result in improved satisfaction with the process and decision.

$H3$: GSS use will result in improved product quality.

Process Facilitation

For this research, process facilitation is defined as the provision of procedural structure and general support to groups through the meeting process. Examples of process interventions are the facilitator encouraging the group to stay on track with the agenda, discouraging criticism during brainstorming, and eliciting equal participation from all group members. Process facilitation provided in this study focused on assisting with task structuring. It was scripted and therefore relatively restrictive. The provision of
socioemotional support was not in the facilitation script. Nevertheless, meeting facilitators appeared to provide their groups with varying levels of socioemotional support.

The process facilitation provided may thus be expected to increase members' participation in the task, facilitate productive, task-oriented conflict, while suppressing negative interpersonal behaviors. However, process facilitation may be resisted by the group. As is apparent from the change literature, groups are naturally inclined to resist the unfamiliar heuristic prescribed by process facilitation [52]. Heuristics requiring active participation and involvement from all group members also impose a higher overhead on the group. Members need to commit additional time to uncover and thoroughly explore all options and criteria. They need to risk alienating other group members when they articulate unpopular positions. This may result in lower member satisfaction with the process.

Since meeting facilitators essentially play a leadership role in groups, the literature on leadership can inform us about the relative effectiveness of facilitator roles. Research has found that leadership based on negative reinforcement tends to result in poorer follower performance and satisfaction [3, 29]. Participation in group work is frequently based on such negative reinforcement, where failure to participate or follow the designated rules results in negative consequences, whereas participation or compliance with rules does not lead to foreseeable rewards for the individual. Within such a context, we can expect groups to resent and circumvent the heuristic prescribed by process facilitation.

While the literature on leadership may lead us to expect a negative effect of process facilitation on member satisfaction and product quality, prior GSS research contradicts this position. Anson et al. [1] and Partridge [44] found that process facilitation improved satisfaction levels. Wheeler and Valacich [59] and Partridge [44] found that process facilitation improved product quality. In keeping with these findings, we propose the following:

\[ H4: \text{Process facilitation will have a positive impact on group processes.} \]

Process Facilitation and GSS Use

As seen above, studies of GSS use suggest that the technology combined with process facilitation will result in better meeting processes and outcomes [1, 49]. There are two reasons for this. First, as a yet relatively novel meeting environment, groups are unlikely to have a strong mindset about what constitutes an efficient or appropriate meeting heuristic within the GSS environment. Thus, there is no need to unfreeze the group.

Second, GSS provide several resources that contribute to the efficiency and feasibility of the prescribed heuristic. For example, simultaneity and electronic recording enable the group efficiently to uncover and explore options and criteria. This helps group members participate openly and equally. Anonymity makes it feasible for group members to voice unpopular opinions without fear of ridicule or censure. Such comfort contributes to both open participation and the ability to voice conflicting opinions.
Further, the ability to speak one’s mind prevents a sense of frustration that detracts from relationship development and contributes to negative meeting behaviors. We therefore propose:

\[ H5: \text{Process facilitation, in conjunction with GSS use, will have a positive effect on meeting processes.} \]

Content Facilitation

Content facilitation involves interventions that relate directly to the problem being discussed. For example, a facilitator might supply an insight, opinion, or interpretation of facts or events in the case. While the GSS literature has traditionally downplayed the responsibility of the facilitator in the content of the meeting, Eden [17] proposes that this is an important facilitator role. The leadership literature also suggests that content facilitation may actually be a critical facilitator task. A leader’s involvement in the content of the task, rather than simply prescribing process, can be very effective [29, 32]. Well-timed content interventions can reenergize or refocus a group, or help them navigate an impasse. The leader’s ability to supply meaning, intellectual stimulation, and inspiration is an important facet of this leadership role [29, 47].

Content interventions from the facilitator, however, can stifle participation by group members who come to rely on the facilitator as a source of meaning or ideas. Meeting facilitators are typically highly influential in the group’s proceedings. Suggestions from an influential person are evaluated more favorably by group members [50]. Stated preferences by a group leader can suppress group discussion and create conditions favorable for the development of groupthink [41, 43]. Facilitator participation in the content of the task may prevent group members from addressing areas of conflict if they perceive that the facilitator has a position on the conflict. We therefore propose:

\[ H6: \text{Content facilitation will have a negative impact on group processes.} \]

Content Facilitation (by Facilitator) and GSS Use

GSS technology can help the facilitator steer the content of the group’s discussion without overtly appearing to do so. The anonymity permitted by the technology can allow facilitators to mask themselves as the source of content interventions. We therefore believe that GSS use will permit content interventions from the facilitator without damaging the group’s meeting processes. As seen above, meeting facilitators are likely to be perceived as authoritative figures in group meetings. If group members do not perceive of the content suggestions as emanating from an authoritative source, group participation or conflict is not necessarily stifled. We can therefore expect content facilitation in the electronic medium to stimulate thought and participation from group members, and thereby improve satisfaction and product quality. We propose:
H7: The combination of content facilitation and GSS use will have a positive impact on meeting processes.

Meeting Process

We expect positive meeting processes to improve groups’ satisfaction with the process and their decision. Research has shown that group cohesiveness improves productivity [32] and increases groups’ satisfaction with their processes [36] and outcomes [18]. Similarly, higher incidences of issue-based conflict and lower incidences of interpersonal conflict improve groups’ satisfaction [56]. Positive and equal member participation also results in improved satisfaction [61].

Reduced levels of negative socioemotional participation and interpersonal conflict resulting from the prescribed task-focus heuristic should also result in higher satisfaction levels. Such a task focus in conflict situations causes groups to use more integrative and more mutually satisfying ways of addressing conflict [40]. We therefore propose:

H8: Positive meeting processes will enhance groups’ satisfaction with their processes and outcomes.

H9: Positive meeting processes will enhance product quality.

Methodology

THIS STUDY WAS CONDUCTED AT A MAJOR SOUTHEASTERN UNIVERSITY. The primary objective was to examine the development of group conflict and conflict management with GSS use [40]. Attempts were made to control facilitation. However, differences were noticed in facilitators’ interactions with groups. This article explores these differences.

Students in an undergraduate business policy class participated in the study for class credit. A total of 213 students participated. Groups were constituted by having students sign up for a specific time slot. Thirty-two groups were formed. Group size ranged from five to eight persons. However, size did not significantly affect any of the variables of interest in this study. Group size was therefore not considered a covariate. Groups were then randomly assigned to a treatment condition: sixteen to the GSS condition and sixteen to the manual condition.

Following an initial training session, groups met on four separate occasions to complete four distinct decision-making tasks. Once assigned to a group, subjects were required to meet with that group for all five sessions in order to qualify for class credit. This minimized attrition over the life of the study. Each group was required to reach consensus following an initial alternative generation, evaluation, and voting. At the end of each meeting, relationship development, conflict, equality of participation, process and decision satisfaction, and facilitator perceptions were assessed using self-report measures. The data from the training session are excluded from analysis for this article. All four decision-making sessions were retained for analysis. The
Table 2.  Factor Analysis of the Facilitation Scale

<table>
<thead>
<tr>
<th>Scale item</th>
<th>Factor 1 (process)</th>
<th>Factor 2 (content)</th>
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<tbody>
<tr>
<td>The facilitator was extremely helpful.</td>
<td>0.75735</td>
<td>0.11369</td>
</tr>
<tr>
<td>We could not have made as good a decision if the facilitator had not been present.</td>
<td>0.65686</td>
<td>0.32166</td>
</tr>
<tr>
<td>The problem-solving process would have been somewhat confusing if the facilitator had not been present.</td>
<td>0.78054</td>
<td>0.29680</td>
</tr>
<tr>
<td>The facilitator was an essential part of our group meeting.</td>
<td>0.78667</td>
<td>0.35004</td>
</tr>
<tr>
<td>We might have taken a longer time to reach a consensus if the facilitator had not been present.</td>
<td>0.72218</td>
<td>0.34173</td>
</tr>
<tr>
<td>The group would have performed better if we did not have a facilitator.</td>
<td>-0.66532</td>
<td>0.16625</td>
</tr>
<tr>
<td>The facilitator assisted the group in interpreting the portions of the problem that were unclear.</td>
<td>0.32973</td>
<td>0.74932</td>
</tr>
<tr>
<td>I would like this facilitator to be a part of future group decision sessions in which I am involved.</td>
<td>0.72250</td>
<td>0.02600</td>
</tr>
<tr>
<td>The facilitator provided the group with additional information when the case appeared ambiguous.</td>
<td>0.19304</td>
<td>0.83833</td>
</tr>
<tr>
<td>The facilitator supplied criteria/alternative solutions.</td>
<td>-0.05481</td>
<td>0.81998</td>
</tr>
</tbody>
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The following sections describe the measurement of each of the study variables. Scale reliability, for each of the scales described below, was assessed using Cronbach’s alpha.

Independent Variable—Facilitation

A total of six facilitators—four male and two female—were used in the study. Each facilitator was responsible for an equal number of GSS and manual groups. All initial training was conducted by the researcher. Subsequent sessions were shared by the pool of facilitators, who stayed with their assigned groups through all the decision-making sessions. In order to maintain some consistency in facilitation, and in an effort to control process facilitation, facilitators were provided with a script to help them in their interactions with the group. This script instructed facilitators to introduce the problem and set the context for the meeting. It also indicated the agenda the groups were to follow and outlined the instructions the facilitator was to provide the group on the meeting agenda and process. $^1$ Facilitators were instructed not to provide any content facilitation. Nonetheless, facilitator differences emerged in terms of both process and content facilitation.
A seven-point, ten-item scale assessing meeting groups’ perceptions of their facilitators’ involvement in the meeting was developed for this study. Factor analysis (principal components analysis followed by a varimax rotation) of this scale revealed two dimensions that coincide with process and content facilitation. The eigenvalues for these factors following principal components analysis were 4.65 and 1.63, respectively. After the varimax rotation, the variance explained by each factor was 3.87 and 2.41, respectively. The scale items and factor analysis appear in Table 2. Seven items loaded on the process facilitation dimension, while three loaded on the content/task facilitation dimension. Cronbach’s alpha was computed as 0.885 for process facilitation and as 0.784 for content facilitation.

Independent Variable—Meeting Environment

Groups participating in this study were assigned to work within a traditional meeting environment or to receive technology support. The GSS used in this study was GroupSystems™, version 3.1. Specific GroupSystems™ tools used were issue identification, issue consolidation, and electronic voting. Groups assigned to the traditional meeting environment were provided with process support via manual tools such as flip charts and paper and pencil.

Meeting Process Variables

Five process variables were analyzed: relationship development, issue-based conflict, interpersonal conflict, equality of participation, and negative socioemotional participation. Relationship development was assessed using the Seashore measure of cohesiveness. This is a five-item, five-point scale. The reliability of the scale was estimated to be 0.86.

Issue-based conflict was assessed using an eight-item, seven-point scale developed for this study. The reliability of this scale was found to be 0.84. Interpersonal conflict was assessed using a six-item, seven-point scale developed for this study. The reliability of this scale was found to be 0.81.

Participation was assessed using five items off the meeting behaviors instrument developed by Green and Taber [24]. The reliability of this scale was found to be 0.81. Negative socioemotional participation was measured using a four-item, seven-point scale from the Green and Taber [24] instrument. The reliability of this measure was 0.71.

Outcome Variables

Process satisfaction was a five-item, five-point scale drawn from the Green and Taber instrument. Similarly, decision satisfaction was assessed using another five-item subset of the Green and Taber instrument. The reliability of the process and decision satisfaction scales were found to be 0.862 and 0.841, respectively.

A fifteen-item, seven-point scale for assessing the quality of groups’ decisions was
constructed with input from seven experts in the task domain. The reliability of this scale was determined to be 0.90. Each decision was rated by three independent raters using the scale. The average correlation among the three raters’ ratings of the groups’ decisions was 0.68. Interrater reliability on the assessment of decision quality was confirmed using the technique of intraclass correlations recommended by Shrout and Fleiss [53]. This technique assesses the significance of the difference between the ratings ascribed by each rater. The ratings were found to be reliable at the $\alpha = 0.05$ level ($F_{\text{difference}} = 2.84, p = 0.0607$).

Controlled Variables

During the first group meeting, groups were trained in constructive meeting behaviors. Training addressed problem solving, conflict resolution, meeting processes, and, for technology-supported groups, the use of GSS. Training was scripted and administered by one trainer (the primary researcher) across all groups.

In the four subsequent sessions, groups met to solve a series of planning/decision-making tasks related to a fictitious company called Palo Verde Vintners, Inc. [10]. A meeting agenda was developed to support this series of tasks. This meeting agenda was then held constant across groups and treatment conditions. It was printed at the top of the task description presented to the groups at the start of each meeting session. The agenda was reinforced by meeting facilitators, who restated it for the group and prompted group members to adhere to the agenda.

The meeting agenda consisted of the six distinct steps. During the first step, information search, groups were encouraged to read the case problem for the day and attempt to identify relevant criteria. The next step was alternative generation, wherein the groups brainstormed for alternative solutions or courses of action. They were asked to attempt to generate a large quantity of ideas, rather than focus on idea quality, and were instructed not to filter or judge their own or others’ ideas. In the third step, consolidation, groups attempted to generate a concise list of alternatives by deleting or merging overlapping or redundant items. During the fourth stage, evaluation, groups rank-ordered the alternatives retained from the previous stage. The fifth step involved a discussion of the vote results, and a revote. The final stage involved the groups’ write-up and explanation of their chosen solution.

Results

Table 3 presents individual facilitator scores on each of the two factors—process and content facilitation—across traditional and GSS meetings. The data in the table indicate that, for the most part, there were no systematic differences in the facilitation provided to manual versus GSS groups.

The amount of process facilitation provided by each facilitator was considerably greater than the amount of content facilitation. However, groups perceived the overall amount of facilitation provided to be fairly low (1.3–4.3 on a seven-point scale). Thus, at worst, groups tended to “strongly disagree” that process or content facilitation was
Table 3. Average Facilitator Scores, Standard Deviations, and Differences

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Traditional groups</td>
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<td>5.6025</td>
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<tr>
<td></td>
<td>(0.8929)</td>
<td>(1.0319)</td>
<td>(1.1899)</td>
<td>(1.0315)</td>
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<tr>
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<table>
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</table>

provided; at best, groups reported that they were “neutral” in their perception of whether the facilitator supported the meetings’ process and/or content. Since facilitation was scripted, in an effort to control for facilitator effects, this low range of facilitator scores is not unusual. Facilitators in this study were not permitted the flexibility to influence the meeting process or content to a greater extent. It is apparent, however, that scripting failed to control facilitation differences completely. The study results reported in this article focus on these uncontrolled differences and their subsequent impact on meeting processes and the achievement of meeting outcomes. Table 4 indicates highly significant correlations among study variables.

Structural equation modeling was used to estimate simultaneously factor loadings on the process and outcome variables, and the various path coefficients. This technique computes factor loadings and path coefficients so as to maximize both the factor loadings and path coefficients. The SAS CALIS (Covariance Analysis of Linear Structural Equations) procedure was used with the EQS (equations) model [5] option to analyze the research model. The interaction terms for GSS use and process and content facilitation were based on the technique suggested by Chin, Marcolin, and Newsted [11]. This technique suggests that an interaction term may be created from all possible cross-products of the indicators of each of the variables contributing to the interaction. The newly created latent variable may then be included in the causal model.

The unit of analysis on all variables was the individual. The decision was made to use individual observations, rather than to aggregate at the group level, since all but one of the variables represented the perceptions of the individual. Aggregating into group variables would have sacrificed the range of variation for each variable. This
<table>
<thead>
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<th>Pers con</th>
<th>NSEm</th>
<th>DSat</th>
<th>PSat</th>
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<tr>
<td>Envrt</td>
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would have constricted our ability to observe relationships among study variables, particularly since the range of variation on the facilitation variables was already restricted due to the design attempts to control facilitation. Further, the use of group mean scores would have distorted the factor loadings of the manifest variables. Thus, the following results should be interpreted as subjects' perceptions of the various dimensions explored in this study.

Analysis results are presented in figure 4. The \( \chi^2 \) test indicated that the hypothesized model was not a close fit to the data (\( \chi^2_{(50)} = 346.27, p = 0.0001 \)). However, this test of a structural equation model is notoriously susceptible to large sample sizes [7]. Given our sample size of 586 observations (after attrition due to missing values), we use two alternate criteria proposed by Byrne [7]. First, we compare the above \( \chi^2 \) for the hypothesized model with the null model \( \chi^2_{(78)} = 1476718.04 \). Since the hypothesized model \( \chi^2 \) is considerably less than the null model \( \chi^2 \), the hypothesized model may be considered a relatively good fit [7]. Second, we examine the values of Bentler and Bonett’s normed fit index (NFI) and the comparative fit index (CFI). While these values may lie between zero and one, Byrne [7] requires values higher than 0.90 for an acceptable fit of the hypothesized model to the data. NFI and CFI values close to one indicate a near-perfect fit. The NFI value for the hypothesized model was 0.9998, and the comparative fit index was also 0.9998. Thus, we conclude that the hypothesized model did in fact fit the data well.

The model explained 11.55 percent of the total variance in meeting processes, 90.39 percent in satisfaction, and 1.48 percent in product quality. The beta weights associ-
Table 5. Significance of Paths

<table>
<thead>
<tr>
<th>Path</th>
<th>β</th>
<th>Standard error</th>
<th>t-value</th>
<th>p(t)</th>
</tr>
</thead>
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<tr>
<td>GSS → process</td>
<td>0.1939</td>
<td>0.1564</td>
<td>0.9194</td>
<td>0.3583</td>
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<tr>
<td>Process facilitation → process</td>
<td>0.4855</td>
<td>0.0933</td>
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<td>0.0001</td>
</tr>
<tr>
<td>Content facilitation → process</td>
<td>−0.4803</td>
<td>0.0962</td>
<td>−3.7012</td>
<td>0.0002</td>
</tr>
<tr>
<td>GSS*process facilitation → process</td>
<td>−0.3756</td>
<td>0.1863</td>
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<tr>
<td>GSS*content facilitation → process</td>
<td>0.3913</td>
<td>0.1308</td>
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</tr>
<tr>
<td>GSS → satisfaction</td>
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</tr>
<tr>
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<td>Process → product quality</td>
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<td>0.0619</td>
<td>1.2653</td>
<td>0.2063</td>
</tr>
</tbody>
</table>

ated with a path are the standardized coefficients of multiple regressions. Significance of each path was assessed via t-tests (see Table 5). Given the exploratory nature of this study, a less stringent significance level of 0.1 was adopted. Significant paths (α_{FW} = 0.1/9 paths yields α = 0.011) are highlighted in figure 4. Factor loadings on latent variables are indicated for each of the two latent variables.

GSS use did not have a significant effect on either the meeting process, member satisfaction, or product quality. As anticipated, process facilitation had a positive impact on meeting processes, and content facilitation had a negative impact on meeting processes. Meeting processes contributed significantly to member satisfaction but did not affect product quality. The hypothesized positive interaction effect of GSS use and process facilitation on meeting process was not found. Nor was there a significant effect of the interaction between GSS use and content facilitation on meeting processes.

Table 6 summarizes the direct, indirect, and total effects of each of the independent variables in the model on meeting outcomes. Indirect effects are computed as the product of the composite paths; total effects are the sum of the direct and indirect effects [2]. The calculation of indirect and total effects allows us to understand the relative impacts of the exogenous variables on outcome variables in the model. Thus, we see that the overall effect of process facilitation on satisfaction is positive, while the impact of content facilitation is negative. Both process and content facilitation have negligible effects on product quality. The interaction of GSS use and process facilitation has a negative impact on satisfaction, while GSS use combined with content facilitation positively affected satisfaction. The total effect of the interaction terms on product quality was close to zero.

Discussion

THE RESULTS OF THIS STUDY INDICATE THAT PROCESS FACILITATION had a positive impact on the meeting process, while content facilitation had a negative impact. We
Table 6. Summary of Indirect, Direct, and Total Effects of Facilitation on Meeting Outcomes

<table>
<thead>
<tr>
<th>Effect</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSS use → satisfaction</td>
<td>0.0419</td>
<td>0.1830</td>
<td>0.2249</td>
</tr>
<tr>
<td>GSS use → product quality</td>
<td>0.0976</td>
<td>0.0118</td>
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<tr>
<td>Process facilitation → satisfaction</td>
<td>—</td>
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<tr>
<td>Content facilitation → satisfaction</td>
<td>—</td>
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<td>-0.4534</td>
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<tr>
<td>Content facilitation → product quality</td>
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<td>-0.0291</td>
</tr>
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<td>GSS use*process facilitation → satisfaction</td>
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<tr>
<td>GSS use*process facilitation → product quality</td>
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<td>-0.0228</td>
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<td>0.0237</td>
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</table>

found no significant main effects for GSS use on meeting process, member satisfaction, or product quality.

As anticipated, process facilitation improved groups’ perceptions of their meeting process. The indirect effect of process facilitation on satisfaction was positive (see Table 6). However, the impact of process facilitation on product quality was negligible. Consistent with our hypotheses, content facilitation had a detrimental effect on meeting processes. The indirect effect of content facilitation on satisfaction was also negative. Again, the impact on product quality was negligible.

Our findings on the role of GSS use and process facilitation are consistent with those of Wheeler and Valacich [59] who reported positive results from restrictive facilitation, but contradict those of the Dickson et al. [16] study, where the restrictiveness imposed by GSS use and process facilitation was ineffective. Anson et al. [1], too, caution against restrictive facilitation. The difference in the apparent success of restrictive process facilitation may lie in the suitability of the heuristic facilitated to the nature of the group and the task. Goodhue and Thompson [23] emphasize the need for technology to fit the needs of the task in order to enhance performance. McGrath [38] identifies four major task functions: generate, choose, negotiate, and execute. The tasks in our study involved decision making. This was true of the Wheeler and Valacich [59] study too. According to McGrath’s [38] task typology, decision-making tasks necessitate choose behaviors. The task used on the Anson et al. [1] study was a creativity task, requiring generate and execute behaviors. Dickson et al. [16] used a cognitive conflict task, requiring groups to negotiate decision criteria as well as a solution. Perhaps restrictive facilitation is appropriate for tasks requiring choose behaviors, but not on tasks requiring generate, execute, or negotiate behaviors. Our results failed to support our hypotheses and the findings of Anson et al. [1] and Wheeler and Valacich [59] on the additive, positive effects of GSS use and process facilitation.
Implications for Facilitation Practice and Research

This research examined the impacts of two types of meeting facilitation, process and content facilitation, within traditional and electronic meeting environments. Our results indicate a positive impact of process facilitation on meeting processes, and a negative impact of content facilitation. Good meeting processes greatly enhanced member satisfaction but had no effect on product quality.

A major limitation of this study lies in the design. The study was designed to control facilitation behaviors. While differences yet emerged, it is likely that the range of variations in facilitation behaviors were constricted by our design—that is, scripting facilitation. This research should therefore be considered exploratory. Future research needs to examine process and content facilitation more completely, within a study specifically designed for the purpose. For example, while insignificant, the interaction effects of GSS use and process and content facilitation on meeting processes bears further investigation. A study focusing on facilitation, rather than a serendipitous observation of facilitation effects despite attempts to restrict variations in facilitation, may provide a clearer picture of these interaction effects. The possible ability of GSS use to diffuse content facilitation positively could be an important advantage of the technology. More important, the possibility that GSS use may hinder the effectiveness of process facilitation certainly requires further investigation.

We currently know very little about strategies and mechanisms for providing content facilitation. Formal content facilitation has been limited to seeking expert briefings and advice. While such consultation with content experts is useful, and greatly reduces group insularity and the possibility of groupthink [30, 42], future research needs to investigate modes for providing advice, sharing information, and supplying meaning during group meetings.

Since content facilitation is obviously an important facilitator behavior, future research should explore three additional avenues for providing content facilitation: the external facilitator, internal group members, and technology support. Research should explore the feasibility of external facilitators providing content facilitation in real-world groups. Eden [17] believes that not only is this possible, but it is also desirable. However, guidelines need to be developed to help external facilitators balance process and content facilitation. Perhaps the balance lies in the use of an expert for content facilitation and a facilitator for process facilitation.

Bostrom et al. [6] indicate that various facilitation roles are frequently undertaken by group members themselves. Bringing in an external facilitator is usually not feasible. If this is the source of content facilitation, then group leaders should also be trained in meeting processes so that their content interventions do not impede productive group processes. For example, a knowledgeable group leader may adopt a directive leadership style, thereby suppressing group interactions and making the group susceptible to groupthink [19, 20, 34, 37].

More research is needed into the use of technology itself as a content facilitator, along the lines of that conducted by Limayen and DeSanctis [35]. The role of technologies such as expert systems, executive information systems, and decision
support systems in supporting expert consultation, information exchange, and the provision of meaning also needs to be explored. Such technologies may be able to assume the role of content expert or facilitator during group meetings. Also, since it is evident that GSS mediate facilitation impacts, the use of this technology as a bridge to other content-enhancing technologies should be investigated.

Further, the relationship between process and content facilitation needs to be explored. These two roles can be confusing and a thin line for an external meeting facilitator or group leader to walk. For example, facilitators use questions to get group members to explore all sides of an issues. A facilitator might ask "What will that do for us?" when a member offers a possible course of action. The facilitator is getting the members to explore the motivation for the consequence of following the proposed course of action. While the question changes the content on which the group is focusing, it is still considered process facilitation.

Future research may find it advisable to manipulate facilitation levels or obtain facilitation measures from sources other than group members. The ability of GSS to promote "group ownership" of ideas and information may preclude group members from accurately assessing the contributions made by the facilitator, particularly in regard to content facilitation. In addition, research also needs to investigate other facilitator roles such as training and relationship development.

Finally, it is apparent that some of the results of this study arose out of the use of student groups—for example, the apparent ineffectiveness of process facilitation. Also, meeting facilitators in this study were also instructors at the college of business. Real-world groups may respond differently to process and content facilitation. Facilitation should therefore be explored again with real-world groups.

NOTES

1. A copy of the facilitator script may be obtained from the first author.
2. For a complete description of both conflict scales, scale items, and analysis, see [40].

REFERENCES


32. Keller, R.T. Predictors of the performance of project groups in R&D organizations.


