An experimental investigation of electronic focus groups

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Abstract

Recently, we began applying Group support systems (GSS) tools to tasks and groups that are uncharacteristic of the GSS research literature. Instead of using GSS tools on tasks requiring a solution, a decision, or any threshold consensus measure, we examined the potential utility that these tools have in the area of marketing research, specifically with focus groups. The results of an experimental study to validate the use of this technique are presented. The results indicate that GSS can offer improvements in the areas of, number of comments, focus on the task, and distribution of participation, while not suffering a loss of participant satisfaction. Additionally the results show some promise that the size of focus groups can be increased through the use of GSS technology.

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1. Introduction

The number of marketing research efforts being conducted with information technology (IT) support has increased significantly in recent years. The Internet, the World Wide Web, and other online technologies, such as video conferencing, are increasingly being fused with traditional market research tools to help determine how the consumer has behaved, or will behave, with respect to a product or service.

A primary implication of the increased use of IT-supported market research is that there is additional value added to the process and/or to the outcomes from the tools relative to traditional market research techniques. Usually, the added value is related to the process, for example, lower cost of conducting the research, the ability to include research participants from different geographic areas, and/or the reduction in research cycle times \cite{3,19,25,29}. Interestingly, an important outcome attribute, quality, receives little mention as one of the value-added attributes bolstering IT-supported market research. As such, it is not clear that people adopting these IT-supported processes actually know that the results of their efforts are at least comparable in quality to the more traditional, non-IT processes. For many, the tangible process benefits, such as lower costs and shortened research times, sufficiently offset any perceived or real differences in the less tangible outcome measures, such as research quality. Others, however, are convinced that the new computer-supported market research techniques do not compare to the traditional ones \cite{9,20}.

One of the more commonly employed methods of market research, the focus group, arguably leads the
controversy as to whether IT-supported processes, such as electronic focus groups, can successfully supplant traditional market research processes, such as the traditional focus groups. This issue is gaining in importance, because the number of focus groups is increasing each year and there is an increasing reliance on electronic focus groups [16]. According to Wagner, some market researchers are currently conducting about 25% of their focus groups on-line. Others are predicting that electronic focus groups may completely replace traditional focus groups in 3 to 5 years [8]. A recent Advertising Age article ”signaled the end of traditional focus-group research” altogether [15].

There are a number of factors that may be contributing to the controversy over the value of electronic focus groups or the longevity of traditional ones. Some of these problems are inherent to focus groups and stem from the subjectivity of the technique itself. According to Calder, the focus group process leaves many concerned that “any given result may have been different with different respondents, a different moderator, or even a different setting” [2]. Byers and Wilcox suggest that this is a ‘validity problem’ that exists in most methods of qualitative research [1]. They also cite social conformity as another problem inherent in the focus group methodology. In addition to concerns over the traditional methodology, new concerns have arisen regarding the newest form—the electronic focus group.

Some of the issues regarding them can be attributed to the electronic aspect of the methodology. The advances in computer and communications technologies, especially those related to the World Wide Web, have allowed market researchers to offer services that “bend the traditional definition of focus group”. This terminology issue is, such that Greenbaum, one proponent of traditional focus groups, suggests that it may be necessary for organizations that use the Internet to conduct focus groups to develop different terminology for this approach because he believes that the online methodology “has no direct ties to the focus group methodology”.

Another plausible reason for the controversy regarding electronic focus groups is related to the speed at which these new market research technologies are being introduced and deployed. Their rapid diffusion has created a void in the research that could ultimately help prove or disprove Greenbaum’s assertion. To date, there has been relatively little empirical focus group research [17,27] and very little research that specifically targets electronic focus groups [26] that might assist in understanding potential problems.

The objective of this study was to gain a better understanding of technology-aided focus groups. To meet this objective we studied the process and the outcomes of focus groups supported by Group support system (GSS) technology and analyzed the results for gains/losses relative to traditional focus groups.

2. Background

The same technologies that are propelling electronic focus groups, the World Wide Web and the Internet, are predicted to provide a new surge of interest in GSSs [18]. GSS is the term that has become synonymous with the combination of computer, communication, and decision technologies that have been used over the past twenty years to alter the nature of participation within groups and influence the decision quality and other outcomes of a meeting [10]. Surprisingly, there have been few formal attempts to link focus groups and technology-oriented tools, such as GSS.

In 1985, Cohen described how hand-held devices could be used to help gauge audience reaction to commercials; this was one of the first of few formal associations between focus groups and computer technology [6]. Clapper and Massey were the first to formally link focus groups and GSS. Their effort described how three dimensions of focus groups: its composition; the degree of topic controversy; and the involvement of the moderator, can be used to study the impact of GSS technology. More recently, Parent et al. implicitly validated and broadened the focus group/GSS relationship by describing how GSS can help focus groups in the creation of knowledge.

This seemingly nascent relationship between focus groups and GSSs is actually much more pervasive than is suggested by these studies. The GSS literature contains numerous implicit links to the focus group methodology that we feel can be used to assemble the research framework that is ultimately required for a better understanding of electronic focus groups.

Before attempting to identify pertinent relationships between focus groups and GSSs, it is useful to look at
focus groups and GSSs separately to understand their individual advantages and limitations.

3. Focus groups

Focus groups evolved from ‘focused interviews,’ relatively small, moderated discussion groups that concentrated on a single topic. Their use has been traced as far back as the 1940s, but they were not used regularly until the late 1960s. Today, focus groups represent a commonly-used, qualitative research technique employed in a wide range of disciplines for a myriad of purposes. Parent, et al. note that some market researchers perceive focus groups as “the most effective manner in which to qualitatively discern ... consumer knowledge about a product.”

The marketing literature contains numerous descriptions of focus groups [7]. While there is little agreement among focus group researchers as to what constitutes its exact methodology, most researchers seem to agree on at least a few characteristics: they should consist of a relatively small group of people (usually 7–12), led by a moderator, discussing a particular topic for 90–120 min. Generally, they are considered effective because they are designed to encourage participants to interact, leading to the unveiling of thought processes of the participants. Conceptually, the interaction allows researchers not only to discover what people think about a particular topic, but also why they think the way they do [23].

Not surprisingly, traditional focus groups suffer from many of the same limitations as other task-oriented groups. For example, large groups of people are generally more difficult to manage than small groups. This is the primary reason that focus groups are normally no larger than twelve people; poorly managed focus groups often produce meaningless, unfocused discussion.

Another common problem associated with group work is that participation may be unequally distributed. This problem may occur due to ‘social forces’ [5,21] such as inhibition or shyness, or ‘situational communication anxiety’ [22] that may be induced by dominance of the discussion by one or more group members and/or fear of retribution if member status or hierarchy is considered important to group members. Researchers have described these forces as “non-rational influences that can affect the perception of an idea’s worth and constrain a person’s participation in the group” [4].

Given the growing reliance on focus groups, techniques that help ease these limitations should prove beneficial. Further, adding electronic support could not only mitigate these limitations but also offer additional gains, such as lower costs and/or higher quality.

4. Group support systems

Since the early 1980s, researchers have attempted to alleviate the social forces and non-rational influences of task-oriented groups using various combinations of computer, communication, and decision technologies as process interventions. These, which over time have been characterized as computer-mediated communication (CMC), Computer supported cooperative work, and group decision support systems, among others, are here termed GSSs. Generally, they alter the nature of participation within a group, which in turn, affects certain outcomes, such as the quality of a group meeting.

The GSS definition provided by DeSanctis and Gallupe: the combination of “communication, computer, and decision technologies to support problem formulation and solution in group meetings” is not only more descriptive, but more indicative of the process traditionally targeted for GSSs, i.e. group decision-making. GSS technology traditionally has focused on groups that share, at least minimally, an ad hoc interest in solving an organizational problem or achieving a threshold consensus measure regarding a decision. Many believe that the effectiveness of GSS-augmented processes over traditional processes is a partial derivative of the ability of the GSS technology to engender equal participation and higher levels of consensus through anonymous and simultaneous input of participant ideas, comments, and evaluation [11–14]. Clapper, et al. indicate that these features offer the potential to mitigate those “non-rational influences that ... constrain a person’s participation in the group” inherent in traditional focus groups.

Turoff and Hiltz conducted some of the earliest efforts to understand how group processes may be affected by GSS intervention. Their early studies
comparing the process and outcomes of groups using computer-mediated communication (CMC) to groups using face-to-face (FtF) communication were the precursors to a wave of GSS-related research that, as of mid-1998, included over 200 empirical studies and 230 published articles. These studies used a variety of task types, technology interventions, group compositions, and research variables and often led to mixed results. A detailed reporting of this is beyond the scope of this paper. However, they do indicate that, despite over 200 studies looking at the effectiveness of GSS, the overwhelming conclusion is that there is "no difference between face-to-face and GSS" groups.

This result supports the assertion by Nunamaker et al. [24] that different GSS technology configurations produce different and often conflicting results. However, they indicate that there are some areas that are likely to benefit from GSS technologies. Characteristics of these areas include using: subjects who are likely to be knowledgeable and motivated about the task, medium to large size groups (at least six, ten, or more participants), and a task type, such as idea generation. Coupling these recommendations with the conceptual GSS framework established by Fjermestad and Hiltz is quite useful in identifying and organizing the variables that may help lead to a better understanding of electronic focus groups.

There is limited data on the use of GSS to support/enhance focus groups. Clapper and Massey suggested that the impact of technology on focus groups be evaluated by studying forces that work against a non-inhibiting, synergistic group environment. They identified three such forces: the composition of the group, the sensitivity of the issue/topic, and the role of the moderator, as key to a better understanding. Parent et al. conducted an exploratory study of the amount and quality of knowledge-based ideas generated by GSS-supported focus groups. They found support that focus groups using a GSS are capable of generating a greater number of unique, higher quality ideas.

Based on the encouraging results suggested by Parent and Clapper, coupled with the suggestions from Fjermestad, it follows that GSS support should afford benefits to the focus group task. Focus group tasks generally are categorized as idea generation, although sometimes they also include an evaluative component. Focus group participants are typically selected because of their knowledge about the task. The traditional size of focus groups is large enough to benefit from GSS support. Additionally, we believe that GSS support may allow focus groups to increase from this recommended size without suffering process losses.

5. Hypotheses

The first group of hypotheses relates to the general assumption that the communication medium used will affect the session and process outcomes of focus groups:

- **H1**: Focus group participants supported by a GSS will generate more unique ideas than will the participants in traditional focus groups.
- **H2**: Focus group participants that are supported by a GSS will generate more useful ideas, i.e. ideas that are focused on the topic, than will the participants in traditional focus groups.
- **H3**: Focus group participants that are supported by a GSS will have more evenly distributed participation levels than participants in traditional focus groups.
- **H4**: Focus group participants that are supported by a GSS will have higher individual participation rates than will participants of traditional focus groups.
- **H5**: Focus groups that are supported by a GSS will be more satisfied with the focus group process than will participants of traditional focus groups.
- **H6**: Focus groups that are supported by a GSS will be more satisfied with the focus group outcomes than will participants of traditional focus groups.

The second group of hypotheses relates to the general assumption that larger focus groups are less effective than smaller ones. Our belief is that the use of GSS technology in larger groups will help avoid process and outcome losses that are typically related to the size of traditional face-to-face focus groups. As such, some of these hypotheses are looking for null hypotheses.

- **H7**: Larger focus groups that are supported by a GSS will generate more unique ideas than smaller, GSS-supported focus groups.
- **H8**: Larger focus groups that are supported by a GSS will generate a comparable number of useful ideas; i.e. ideas focused on the topic, as the smaller, GSS-supported focus groups.
• H9: Larger focus groups that are supported by a GSS will not experience a decrease in the distribution of participation levels relative to smaller-sized focus groups.

• H10: Larger focus groups that are supported by a GSS will be as satisfied with the focus group process as smaller, GSS-supported focus groups.

• H11: Larger focus groups that are supported by a GSS will be as satisfied with the focus group outcomes as smaller, GSS-supported focus groups.

6. Research methodology

An experimental study was conducted to investigate how GSS-supported focus groups would perform in terms of: unique ideas, on-task ideas, and participation compared to traditional focus groups. Additionally, the study investigated differences between large and small focus groups within the GSS treatment.

6.1. Method

The research involved an evaluative task to provide feedback to a camera manufacturer about two new cameras that were being introduced, and to provide feedback about the commercials being employed for that purpose. The task required members of the target audience to watch a commercial about a camera and then provide evaluative feedback about the commercial and the camera. The task was then repeated using a second commercial and camera. The task therefore reflected a very common and frequently employed use of traditional focus group research.

6.2. Research setting

The study was conducted in a research facility at a large university in the Southwestern United States. This facility is used by commercial market research firms to conduct both traditional and electronic focus groups. The facility has a round conference table that seats 20 participants. There are an additional perimeter seats that can be used by additional participants and/or observers. The facility was specifically designed to support group activities with and without technology; i.e. the computer equipment at each station was available for the GSS sessions and easily hidden in traditional face-to-face sessions. The GSS software used was Ventana’s Group Systems. Projection capabilities enabled easy viewing of the test commercials.

6.3. Recruiting and sample characteristics

The focus group literature stresses the importance of homogeneity of the subjects. Further, the subjects must be appropriate for the task at hand. Given the nature of the research task, the subjects were recruited from a pool of undergraduate students—the specific target audience for the products and commercials being tested. A total of 120 students (55 men and 65 women) participated. Their average age was 22 years, and the average year in school was a second semester junior. 83% of the subjects had not previously participated in a focus group. Payment, typical for focus group participation, was in the form of extra credit and the possibility of winning a camera in each session. The common disadvantages of using students as subjects (zero-history groups, less committed to the task, representativeness, etc.) were not an issue in this study, because students were the targeted consumers of the products being evaluated and focus groups do not require a history of working together.

6.4. Experimental design

The experimental design, shown in Fig. 1, was a two-by-two factorial with group size (8 and 12) and communication medium (FtF and GSS) as the factors. There were three observations in each cell, resulting in a total of 12 groups and 120 subjects. The 12 focus group sessions were conducted over a 5-day period.

6.5. Independent variables

The independent variables of interest in this study were communication medium and group size.

<table>
<thead>
<tr>
<th>Communication Medium</th>
<th>Face-to-Face</th>
<th>GSS</th>
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<tbody>
<tr>
<td>Group Size</td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>3 Groups</td>
<td>3 Groups</td>
</tr>
<tr>
<td>12</td>
<td>3 Groups</td>
<td>3 Groups</td>
</tr>
</tbody>
</table>

Fig. 1. Experimental design.
As suggested above, both have been shown to affect the interaction processes.

The communication medium was varied at two levels. Subjects were randomly assigned to a GSS group or to a face-to-face (FtF) group. In the GSS groups, the moderator verbally led the group through the session; all subject responses to the focus group questions were entered via the participant workstations. In the FtF groups, the participants communicated completely via the verbal channel. The same moderator and the same script (i.e., discussion questions) were used in both group types.

The group size was also varied at two levels. Subjects either participated in a group of size eight (within the range of accepted size for focus groups) or size twelve (the maximum recommended size for traditional focus groups).

6.6. Dependent variables

The dependent variables were related to the process outcomes of the focus groups. These included the number of unique comments per participant (comments not already made by someone else) and the number of useful comments per participant (those that specifically addressed the question). Our useful comments are akin to what Parent, et al. referred to as ‘knowledge creation’. Additionally, the process outcomes included the number of different questions answered per participant, the number of different comments per participant, participant satisfaction with the process, and participant satisfaction with the outcomes.

6.7. Experimental procedures

Participants in the focus group experiment used a web-based registration system to check the open focus group session dates and times and to self-register for a focus group session. They were not aware of the different treatment conditions when enrolling. The system allowed participants to print an admission ticket that they used for admittance to the appropriate session. Upon arrival at the focus group facility, participants presented their admission tickets, were seated, and were asked to complete a pre-session questionnaire collecting basic demographic information.

An experienced focus group moderator followed an identical script for each session. After an introduction to the process and some introductory questions, participants were shown the first camera commercial followed by the set of scripted questions. Participants then responded to a set of questions about the camera. The participants repeated the process for the second camera. The order in which the commercials and cameras were presented was varied between groups to eliminate order bias. At the end of the session the participants completed a post-session questionnaire to obtain an assessment of their satisfaction with the focus group process and the outcomes. All sessions were videotaped for consistency. The total time in each session was held constant to 1.5 h.

In the face-to-face sessions all participant feedback was verbal. In the GSS sessions, all participant feedback was gathered electronically. A GSS operator was in charge of the running of the software and system, freeing the moderator to focus on the group discussion. For data analysis, each GSS session used unique, randomly-assigned participant codes to aggregate comments while preserving the anonymity of GSS participants.

6.8. Data preparation and editing

The videotape discussions from the FtF sessions were all transcribed and independently coded by two graduate students who were assisting in the study and trained in the coding process. The electronic transcripts produced in the GSS sessions were also printed and independently coded. Participants’ comments were also coded on two dimensions: those that were unique and those that addressed the question. After the coding was complete the graduate students met to compare their results. The inter-rater agreement was 0.85. The coders resolved all disagreements and used a single set of assessments in the data analysis.

7. Results

Tables 1–6 present the results of the first six hypotheses comparing GSS supported focus groups with FtF focus groups. An independent groups t-test was performed for each hypothesis comparing the FtF condition with the GSS condition using an alpha level of 0.05.
Table 1 shows the test of Hypothesis 1 was statistically significant, $t(118) = -10.82, P < 0.001$, one-tailed, indicating that GSS-supported focus groups are more likely to generate more unique ideas than traditional focus groups.

Table 2 shows the test of Hypothesis 2 was statistically significant, $t(118) = -15.27, P < 0.001$, one-tailed, indicating that GSS-supported focus groups are more likely to generate more on-task ideas than traditional focus groups.

Table 3 shows the test of Hypothesis 3 was statistically significant, $t(118) = -9.83, P < 0.001$, one-tailed, indicating that GSS-supported focus groups are more likely to participate in the discussion than participants in traditional focus groups.

While Table 3 shows participation based on number of questions answered by each participant, Table 4 shows the number of responses as measured by the number of different thoughts contributed. This number could be higher than the number of different questions if a participant had more than one answer per question.

Table 5 shows the test of Hypothesis 5 was statistically non-significant, $t(117) = -0.075, P > 0.47$, one-tailed, and failed to support our hypothesis that GSS-supported focus groups are more satisfied with the process than traditional focus groups.

Table 6 shows the test of Hypothesis 6 was statistically non-significant, $t(117) = -1.186, P > 0.12$, one-tailed, and failed to support our hypothesis that GSS-supported focus groups are more satisfied with the outcomes than traditional focus groups.

Tables 7–11 present the results of the last five hypotheses comparing small GSS supported focus groups with large GSS supported focus groups.
An independent groups \( t \)-test was performed for each hypothesis comparing the small GSS condition with the large GSS condition using an alpha level of 0.05.

Table 7 shows the test of Hypothesis 7 was statistically significant, \( t(58) = 3.83, P < 0.001 \), one-tailed. This failed to support our hypothesis that GSS-supported focus groups are more likely to contribute more unique ideas than participants in traditional focus groups. The results showed that the smaller groups (on the average) generated more unique ideas than the larger GSS groups.

Table 8 shows the test of Hypothesis 8 was statistically significant, \( t(58) = 2.56, P < 0.013 \), which failed to support our hypothesis that there would be no difference in the number of on-task ideas between the GSS conditions.

Table 9 shows the test of Hypothesis 9 was statistically non-significant, \( t(58) = 0.238, P < 0.81 \), which supports our hypothesis that there will be no difference in participation levels between the small and large GSS-supported focus groups.

Table 10 shows that the test of Hypothesis 10 was statistically non-significant, \( t(57) = -0.598, P < 0.55 \), which supports our hypothesis that there will be no difference in satisfaction with the process between the small and large GSS-supported focus groups.

Table 11 shows that the test of Hypothesis 11 was statistically non-significant, \( t(57) = 0.0244, P < 0.98 \), which supports our hypothesis that there will be no difference in participation levels between the small and large GSS-supported focus groups.

8. Summary and discussion of results

Table 12, summarizing hypothesis one through six, shows that we found support for our belief that altering the communication medium by introducing GSS support would positively affect the session and process outcomes of focus groups. Our results support Parent et al. who found GSS groups generated a greater number of unique and higher quality ideas. While we did not find support that the GSS would lead...
to higher levels of satisfaction with the process (H5) and the outcomes (H6), the mean results between both treatments are close. We conclude that there is no difference in satisfaction. Given the process gains obtained along with maintaining a comparable level of satisfaction, it appears that GSS technology could be promising in future focus group applications.

Table 13 summarizes the second set of hypotheses. Overall, we found mixed support for our belief that the use of GSS technology in larger groups will help avoid process and outcome losses related to size of focus groups. We found support for our hypotheses that large GSS groups would not lead to lower participation levels (H9), and that large GSS groups would be as satisfied with the process (H10) and the outcomes (H11).

However (consistent with the literature on traditional focus groups) we did not find support that large GSS groups would generate more unique ideas (H7) or a comparable number of on-task ideas (H8). In fact, consistent with the traditional focus group literature, smaller groups performed better for both of those measures. The features of the electronic support could explain these results. The nature of the probing, follow-up questions from the facilitator changes in GSS sessions. The facilitator questions do not come immediately after someone has contributed, since all participants are answering simultaneously and electronically. While efficient, this support feature may have caused a disconnect in the line of thinking for both the participants and the facilitator, leading to fewer follow-up questions and answers. This may have contributed to the lower level of on-task and unique ideas from the larger GSS-supported groups. While the results support the fact that smaller GSS groups are still more likely to provide substantive inputs, there is no decrease in participation levels or satisfaction levels with larger GSS groups. Additionally, it is important to note that the larger GSS groups, compared to the face-to-face groups, on average contributed more unique ideas (15.89 versus 11.13) and more on-task ideas (26.28 versus 16.85). This does show promise that the size of focus groups can be increased and yet yield effective outcomes by gaining information from a wider number of participants.

9. Limitations

While the study conducted here offers insights into the use and value of GSS oriented focus groups, there are limitations. First, the participants were students. While the use of students and their generalizability to the overall marketplace has been documented, the research would be enhanced if a broader sample was used. Secondly, there will always be a lack of consistency between personal and electronic question posing. Exact duplication of the wording, accenting, etc. of questions is not possible. Finally, the focus of this research involved focus groups assigned an evaluative tasks. Additional work should examine more exploratory research in which participants are used to generate new insights, ideas, etc.

10. Conclusions

The results indicate that GSS supported focus groups may provide a superior methodology over
traditional formats. As shown, GSS groups lead to more useful and unique ideas, and involve more group members. These advantages come with no difference in levels of satisfaction from those shown in traditional group methodologies.

In reviewing many of the limitations associated with traditional focus group research, two of the more commonly cited are those of getting participants involved and in keeping the discussion on task. This work indicates that GSS provides a solution to these two problems. The fact that more unique ideas are generated through GSS clearly positions this methodology as an advantage over the traditional method.

Overall, then, this research does conclusively indicate that GSS group methodologies may provide a superior methodology to traditional focus group methodologies.

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