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**REQUIREMENT OF A CHAUFFEUR
WHEN USING A MEETING SUPPORT SYSTEM:
A CASE STUDY RESEARCH**

by

Yves R. Bellefeuille, B.Adm. 1990, B.P.A. (Hons) 1994

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfilment of
the requirements for the degree of

Master of Management Studies

School of Business

Carleton University
Ottawa, Ontario
October 6, 1998
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acceptance of the thesis

**"Requirement of a Chauffeur
when using a Meeting Support System:
A Case Study Research"**

submitted by **Yves R. Bellefeuille B.Adm., B.P.A. (Hons)**

in partial fulfilment of the requirements
for the degree of Master of Management Studies

Thesis Co-Supervisor

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October 6, 1998

ABSTRACT

This case study research examined how participants of computer-supported meetings viewed the two Forms of the Task Facilitative Support Mode - Facilitator/Chauffeur-Driven Form (Facilitator assisted by a technical expert), and Facilitator-Driven Form (Facilitator performs both roles). Using factorial design, four groups of three participants attended two meetings where they were exposed, in different order, to two scenarios and the Task Facilitative Forms. Participants completed questionnaires prior to the experiment, and after each of their meetings, for evaluation of eight attributes - attentiveness, control, interaction, motivation, outcome, participation, satisfaction, timeliness.

While Participant-Dominant Attributes (attentiveness, interaction, motivation, participation) were more important than Meeting-Dominant Attributes (satisfaction and outcome), Facilitation-Dominant Attributes (control and timeliness) were seen as least important for the success of meetings. Overall, a marginal preference for the Facilitator-Driven Form was expressed, and Meeting-Dominant Attributes were perceived better when using the Facilitator/Chauffeur-Driven Form.

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1.0 INTRODUCTION

Technology has impacted many fields of human endeavour during the past 20 years. The business environment, where a large number of manual systems were replaced by computerized ones, is no exception. However, in some areas of business, the interaction between technology and people is not always without problems. This holds true when people come together to meet formally as a group, and technology is used as a meeting support system (MSS).

While everyone involved is partially responsible for the effectiveness of meetings, usually someone takes a leadership role either by choice or appointment. Sometimes, outside facilitation is sought and technology may be introduced as a support component. In these cases, the facilitator may need a technical expert (known as a chauffeur) to ensure that bottlenecks and impasses are avoided, and that technology remains a support while not becoming a burden. This study investigates whether a difference exists, from the participants' point-of-view, when the facilitator is accompanied by a chauffeur or performs both roles.

First, in the *Literature Review Section*, previous studies performed in the fields of group decision-making, applied technology, meetings, and facilitation are discussed. This is followed by the *Research Question Section* which outlines the ramifications and scope of this study. Then, the *Methodology Section* describes the research process, case study design, and analysis and measurement issues. The *Findings Section* outlines the

environmental context in which the experiment took place, presents an in-depth analysis for the selected attributes, including a pre and post-experimental analysis, and lists, by group, participants' perceptions where attributes favour the different forms of the Task Facilitation Support Mode. Based on these results, the *Benefits and Limitations Section* reports the benefits and limitations, and suggests potential future research directions.

2.0 LITERATURE REVIEW

The process of decision-making can be applied to a variety of situations/problems, encountered either individually or in groups. This section, which focuses on the *group* component and acts as a basis for the study, examines current research studies. The first three sub-sections present key elements related to group decision-making, meetings, and facilitation. The following three sub-sections revisit the same subjects, but with an emphasis on applied technology. These sub-sections present benefits and concerns discussed by researchers. The final sub-section stresses the importance of further studies in the field of computer-assisted facilitation in a meeting environment, and provides a summary of this review.

2.1 Group Decision-Making

Making decisions by group has different advantages and disadvantages, as opposed to decisions made by individuals. The following key advantages and disadvantages are presented as common to most groups [Turban (1994), Mosvick and Nelson (1987), Tobia and Becker (1990)]:

Table 1 Group Decision-Making - Advantages

1 - Increased accountability when everyone participates in a decision; 2 - People in groups are better than individuals at finding and analyzing problems; 3 - Knowledge and abilities of a group of people outweigh those of one person; 4 - Better solutions can be derived by a group; and 5 - Group members will usually be committed to the implementation of a decision provided they perceive that it was reached fairly.

Table 2 Group Decision-Making - Disadvantages

- 1 - Potential increase in nonproductive time (socializing, waiting for people,...);
- 2 - Poor planning prior to the group gathering;
- 3 - Facilitator has inappropriate skills to lead a group of individuals;
- 4 - Tendency towards compromised solutions of poor quality;
- 5 - Incomplete task analysis;
- 6 - Some repetition of ideas, information and options may occur; and
- 7 - Longer time and increased cost of making decisions.

Some researchers concentrated their efforts on the development of techniques and practices for reducing negative effects, and promoting positive ones. The use of a particular technique, however, could be successful in one situation but disastrous in another. For example, a technique such as brainstorming (Osborn, 1957) could be efficient for determining when to hold the next meeting but devastating, if the group was composed of doctors deciding the next step during an operation. To improve group decision-making, a number of researchers [Osborn (1957), Van de Ven and Delbecq (1974), M^cGrath (1984)] developed techniques, group typologies, and taxonomies.

This study relies on M^cGrath's (1984) typology of groups (see Figure 1 - *Typology of Groups*) in which three types of groups were identified: *natural groups*, *concocted groups*, and *quasi-groups*. All groups were further categorized by temporal and activity dimensions. Natural groups were defined as *existing independent of the researcher's activities and purposes*. Concocted groups were

essentially formed for research purposes (i.e. to learn more about the process and interaction among participants). In addition to categorization by time and activity, concocted groups were also divided based on composition of the group, and the relation of the task compared to the group's *natural* task. Quasi-groups were seen as groups which are neither natural nor concocted since they have high levels of constrained and artificial patterns of activity. They were further separated based on the artificiality of the task and on restrictions placed on the interaction.

At present, there are still many group decisions made face-to-face. These are composed of what M^cGrath (1984) calls: *elements of concocted group or quasi-group*. When considering all types depicted in M^cGrath's typology, *Face-to-Face Ad hoc Groups* (Figure 1, Cell 9) seems to be the decision-making group type most common in today's business environment.

2.2 Meetings

An important forum for group decision-making is found through the use of meetings. According to Doyle and Straus (1976), we are a meeting society where small groups get together to share information, plan, solve problems, criticize, praise, make new decisions, and discuss old ones. They added another characteristic that a meeting exists when people work together face-to-face. Clawson and Bostrom (1996) listed common meeting problems (Table 3), and outlined various obstacles/difficulties which could produce poor results.

Table 3 **Common Meeting Problems**

- 1 - Unclear goals/outcome;
- 2 - Getting off the subject;
- 3 - No agenda;
- 4 - Obscure meeting procedures;
- 5 - Limited participation. Not acknowledging or utilizing individual differences;
- 6 - Getting locked in a rut;
- 7 - Listening passively or not at all;
- 8 - Ignoring resistance or avoiding conflict;
- 9 - Paying attention to self instead of noticing others;
- 10 - Assuming others think as you think. Not verifying information;
- 11 - Limited rapport with others and resourcefulness in group; and
- 12 - Group becomes dependent on facilitator as expert.

2.3 Facilitation

In 1996, Ackermann defined a facilitator as *someone who aims to substantially increase the effectiveness of group work, thereby making the meeting more successful through better management of both content and process*. McGoff and Ambrose (1991) stated that the role of a facilitator is an integral part of the actual meeting, and that more time should be dedicated to the act of facilitation. Lewis (1996) concluded that most researchers and practitioners believe that high quality facilitation is mandatory. For example, McGoff and Ambrose (1991) stressed that group sessions are predominantly dependent on the facilitator's ability to ensure advancement. Furthermore, for high quality facilitation, roles and responsibilities must be clearly defined, understood, and followed. Clawson et al. (1993) presented key roles of a facilitator (Table 4).

Table 4 Critical Facilitator Role Dimensions

- 1 - Plan and design the meeting;
- 2 - Listen to, clarify, and integrate information;
- 3 - Demonstrate flexibility;
- 4 - Keep group-outcome focused;
- 5 - Create and reinforce an open, positive, and participative environment;
- 6 - Direct and manage the meetings;
- 7 - Develop and ask the “right” questions;
- 8 - Promote ownership and encourage group responsibility;
- 9 - Actively build rapport and relationships;
- 10 - Demonstrate self-awareness and self-expression;
- 11 - Manage conflicts and negative emotions constructively;
- 12 - Encourage/support multiple perspectives; and
- 13 - Present information to group.

Clawson and Bostrom (1996) reported that often the facilitator is the primary cause of a poor result. While facilitators are used to improve the overall effectiveness of meetings, sometimes they jeopardize efforts expended by group members during the pre-meeting and meeting phases. In too many instances, the facilitator may be ill-prepared, ill-equipped, or ill-supported. Lack of preparation and poor processing translate into widespread dissatisfaction (Mosvick and Nelson, 1987).

Bostrom et al. (1993) researched the facilitation process. Figure 2 presents their *Facilitation Framework* comprised of three types of facilitation sources: external facilitators, leaders or members of the group, and Group Support Systems (GSS) technology. Their primary research objective was to design a framework to better

understand the use of facilitation in a GSS environment. This framework can be applied to either total groups, sub-groups or individuals, and can also be used to better understand the general role of facilitation.

2.4 Group Support Systems (GSS)

DeSanctis and Gallupe (1985) defined *Group Support Systems (GSS)* as technological systems which help groups perform their tasks. They also asserted that technology, if used efficiently and effectively, can play a key role in helping groups make decisions. According to Jessup and Valacich (1993), GSS are *...computer-based information systems used to support intellectual collaborative work*. The development of computer technology has led to systems which support the facilitator's work in meeting management (Whiteley and Garcia, 1996). However, Pasmore (1988) stressed that GSS technologies, like all technologies, will always be there to support people rather than to replace people.

Several empirical studies were conducted in the area of GSS facilitation [Clawson (1992), Bostrom et al. (1993)]. Currently, some researchers are focusing their attention on meeting support systems (MSS) which are special instances of GSS. While positive results about meetings were documented [Turban (1994), Grohowski et al. (1990)], means to make meetings more effective are still being addressed (Anson et al., 1995).

2.5 Meeting Support Systems (MSS)

Prior to the emergence of telecommunication technology, most group gatherings were face-to-face encounters. With the advent of faster and more sophisticated computers and improved electronic communications, applied technology has been used as a viable tool for conducting more effective meetings. As previously mentioned by Wagner, Wynne and Mennecke (1993), Whiteley and Garcia (1996) reemphasized that Group Support Systems (GSS) have been involved in meetings for over a decade.

Bostrom et al. (1993), when presenting their meeting model (Figure 3 - *Goal/Outcome Directed Meeting Model*), contended that resources (people, technology) are the catalysts used to transform the present state (problem) to a desired state (outcomes) through a number of action steps (agenda). While this model did not address the most effective way to prepare and conduct meetings, it outlined that work continues in the combined research fields of meetings and Group Support Systems. DeSanctis and Gallupe (1985) presented time and place categories where face-to-face meetings were identified as *Meeting Room* (Table 5).

Table 5 Time and Place Categorization

	SAME TIME	DIFFERENT TIME
SAME PLACE	Meeting Room	Local Decision Network
DIFFERENT PLACE	Tele/Videoconferencing	Remote Decision Making

This case study research concentrates on *Meeting Room* as a group decision-making activity. With the improvement of today's technology, some of the most widely-known computer systems such as *MeetingWorks* provide better face-to-face meeting support compared to meetings without computer support. Based on Enterprise Solutions' *Executive Summary* of MeetingWorks, the following paragraph presents a global definition of this software:

MeetingWorks is a meeting support software product that is a complement of any Decision Support System. It allows meetings to rise to new levels with integrated brainstorming, evaluation and analysis tools all directed and sequenced by a pre-made electronic agenda. "Real time" analysis, on the spot graphing, report generation and printout allow for greater levels of feedback and immediate progress.

2.6 Facilitator and Chauffeur

The emergence of improved technology and the role of facilitation for meetings are seen as key areas for producing better meetings. Clawson and Bostrom (1996) investigated facilitation in face-to-face meetings. Focusing on the use of technology, Nunamaker et al. (1993) listed what they considered to be five potential benefits which can result from effective preparation and conduct of meetings (Table 6).

Table 6 Potential Benefits from Effective Preparation and Conduct of Meetings

- 1 - Parallel communication promotes broader input to the meeting process and reduces the chance that a few people can dominate;
- 2 - Anonymity mitigates evaluation apprehension and conformance pressure, so that issues are discussed more candidly;
- 3 - Group memory enables members to pause and reflect on information and opinions of others during the meeting, and serves as a permanent record of what occurred;
- 4 - Process structure helps focus the group on key issues and discourages irrelevant digressions and unproductive behaviours; and
- 5 - Task support and structure provide information and approaches to analyze the problem.

In addition to the thirteen key roles presented in Table 4 - *Critical Facilitator Role Dimensions*, facilitators have other tasks when using a GSS. For example, Clawson et al. (1993) defined critical tasks for the facilitator such as to select and prepare appropriate technology, understand its capabilities, project comfort with the technology, and promote understanding of its output. In other words, these researchers contended that facilitators must match computer-based tools to the task, select tools that fit the group's makeup, know how to operate the system, solve common technical difficulties, introduce technology to the group, and address problems caused by the technology.

To counteract an excessive workload for one person and ensure the effectiveness of the meeting, a second person to operate the technology was usually required.

Whiteley and Garcia (1996) stated: *With the MeetingWorks GSS, for example, the*

facilitator is frequently supported with a technically-oriented person who serves the role of meeting chauffeur. However, while the introduction of a second person divided meeting management tasks, the researchers believed it raised new concerns such as the impact of interaction during the conduct of meetings.

Dickson et al. (1993) explored different modes of facilitative support; they described *support mode* as the manner in which a group of individuals uses a GDSS. In addition, they added two key roles: management of the process and management of the technology.

As outlined in Table 7 - *GDSS Support Modes*, the *Task Facilitative Support Mode* is in use when one of two forms is in place. First, the *Facilitator-Driven Form* exists when an outside facilitator, with no chauffeur (also known as the technical driver), manages the process of a meeting, and provides information on what to use, when to use, and how to use the technology. Second, what they called the *Hybrid-Form* is in place when a chauffeur is also present and operates the technology as directed by the facilitator. This form was identified in this case study as the *Facilitator/Chauffeur-Driven Form*.

Table 7 **GDSS Support Modes**

Task Facilitative Support Mode	
- Facilitator-Driven Form	(Facilitator and No Chauffeur)
- Hybrid-Form	(Facilitator and Chauffeur)
Operational Facilitative Support Mode	
- Chauffeur-Driven Form	(Chauffeur and No Facilitator)
No Facilitative Support Mode	
- User-Driven Form	(No Facilitator and No Chauffeur)

Dickson et al. (1993) also discussed the *Operational Facilitative Support Mode* that has one form entitled *Chauffeur-Driven Form*. This form is in place when a *User Group Directed* meeting exists with no facilitation, and when members decide on the process, and the chauffeur applies the technology. Finally, their *No Facilitative Support Mode* contained the *User-Driven Form*. In this case, all system functions and features are available at each user workstation, and no facilitator or chauffeur is present.

Following a pilot study where only one person served as facilitator, Dickson et al. (1993) studied two types of GDSS support: *Chauffeur-Driven Form* and *Facilitator-Driven Form*. After comparing pre and post-consensus results, they presented three practical guidelines for the use of a GDSS (Table 8).

Table 8 **GDSS Practical Guidelines**

- 1 - Be careful in selecting GDSS facilitators and ensure they have good facilitation process training to be effective;
- 2 - Consider the use of a chauffeur during early stages and for “one-shot” GDSS experiences; and
- 3 - Recognize that achieving effective use of GDSSs requires substantial organizational support.

Whiteley and Garcia (1996) analyzed the relationship between the roles of facilitator and chauffeur, and developed their EDASA model (*Experience, Discomfort, Awareness, Solution, and Action* as shown in Figure 4). They argued that the *Experience* of both the facilitator and chauffeur leads to feelings of *Discomfort* for one or the other, followed by a sense of *Awareness* of some issues, mutually agreed *Solutions*, and limited testing through *Action* in subsequent sessions. They also stated that the facilitator is perceived at the start of a meeting as having a high-powered position as the meeting manager and process expert, and the chauffeur is seen as clerk and data entry operator. However, during the conduct of meetings, who does what seemed inconsistent. In one instance, a facilitator and chauffeur team split the functions of facilitation, while for another team, facilitation stayed with the facilitator.

While Whiteley and Garcia (1996) did not contend that facilitator and chauffeur teams pass through all steps of their EDASA model, they observed that the roles and responsibilities of both facilitator and chauffeur seemed to be stereotyped at

the beginning of the process. The authors suggested that a system like MeetingWorks, which involves a systematic approach, allowed the chauffeur to take over some of the facilitator functions. The current study extends this suggestion to meetings in which a facilitator takes over all chauffeur's functions.

2.7 Need for Research

The impact of facilitation on group meetings has been a topic of research and debate for over 40 years (Ackermann, 1996). Clawson and Bostrom (1996) conducted a study to improve the understanding of both the roles and responsibilities of facilitator and chauffeur, and the impact of technology in this area. When considering the research of Whiteley and Garcia (1996), the complex interaction of two persons responsible for the effective conduct of a meeting, which tend to be inconsistent, should not be underestimated.

The focus of MSS research has been on the role and responsibilities of the facilitator. However, the need for a chauffeur and her/his impact on a technology-supported meeting should also be researched. Having two people managing one meeting is more costly than having one person. Given that technology is always improving, with systems being more user-friendly and transparent, the management of a computer-supported meeting run by one person should be researched. At present, meeting configurations and their impact still require further investigation. For example, if the presence of the chauffeur is eliminated,

what is the impact on the interaction among participants? The facilitator and each participant may also consider different attributes as contributing factors for the evaluation of a meeting (e.g. number of ideas discussed, time spent on each idea, who participated the most, how was the final decision approved). Further research is warranted to evaluate better synchronization between supporting technologies and people responsible for its effective use in the conduct of a meeting. This study seeks to increase our understanding in this area.

3.0 RESEARCH QUESTION

3.1 Research Statement

The conduct of meetings is a business activity where technology is used in a limited manner. The improved efficiency of using both a facilitator and chauffeur (technical driver) could serve as an impetus for increasing the use of a meeting support tool to achieve a better outcome. Technology can enhance the process, allowing for improved idea generation and group decision-making. Using two persons instead of one to spearhead a meeting may produce different results. Focusing mostly on the impact of one or two persons involved in the conduct of a technology-supported meeting, the following research question will be investigated:

*How do participants of computer-supported meetings
view the different Forms of the Task Facilitative Support Mode?*

Using terminology as expressed by Dickson et al. (1993), this case study research examined the *Task Facilitative Support Mode*, and more explicitly its two forms known as *Facilitator-Driven Form* (no chauffeur) and *Hybrid-Form*. This latter method, which utilized the services of both facilitator and chauffeur, is identified in this study as the *Facilitator/Chauffeur-Driven Form* instead of Dickson's *Hybrid-Form*.

4.0 METHODOLOGY

This section discusses the research process, case study design, analysis and measurement issues. The *Research Process* sub-section presents a macro-level view of the key steps necessary for the conduct of the research. More specifically, it outlines the use of factorial design and three independent variables, namely, two forms of the Task Facilitative Support Mode, the use of two scenarios, and sequencing of meetings.

The *Case Study Design* sub-section outlines selected attributes linked to the developed propositions and the research question. It also provides selection criteria for the two scenarios, technology, participants, facilitator and chauffeur. In addition, the rationale behind the design is presented using data gathering tools.

The *Analysis and Measurement Issues* sub-section outlines how data is gathered by other researchers, and presents how this research will analyze and synthesize information received. Five methods of analysis are presented where a link to the specified questionnaires was made. Then, the unit of analysis outlines the main base for analysis and reporting. Finally, the method used to determine statistical significance is discussed.

Overall, this section provides a template for other computer-supported technology to be researched and compared. The detailed report of the research process, design, analysis and tools strengthens future use of this method and all of its associated components.

4.1 Research Process

Since two forms of the Task Facilitative Support Mode were investigated (Facilitator-Driven and Facilitator/Chauffeur-Driven), groups took part in two meetings in order to outline what they considered similarities and differences between the two forms. This necessity prompts two concerns: the impact of one form being utilized first, and the inappropriateness of participants using the same scenario twice.

To circumvent potential problems, the factorial design approach was used where three independent variables (two forms of task facilitative support, two scenarios, and sequencing of meetings) served as base for this research. In this way, it was possible to estimate the main effects of each independent variable or *active factors*, and the interactions among them (Cooper and Emory, 1995). Other independent variables such as gender, age group and field of expertise were not evaluated.

As presented in Figure 5 - *Research Process Model*, this case study research was comprised of two phases where four groups of three individuals each participated in a meeting for each of the phases. Each group was faced, in different order and combination, with solving two different problems (*Scenario A* - identified as *SA*, see Appendix A, and *Scenario B* - identified as *SB*, see Appendix B), and with the two different forms of the Task Facilitative Support Mode. *Facilitator-Driven*

Form is identified as *FD* (no chauffeur present) and *Facilitator/Chauffeur-Driven Form*, as *FCD* (facilitator and chauffeur present).

Prior to their first meeting, participants were asked to complete *Questionnaire 1* (identified as *Q1* - see Appendix *E*). Its main purpose was to gather basic information such as age group, specialties, previous experience or studies, and to obtain general knowledge about familiarity with technology. In addition, two questions provided pre-case study insight on how everyone felt about the importance of each attribute being investigated. First, participants were asked to rate from +1 *Very Unimportant* to +6 *Very Important* the importance of the eight attributes for success in meetings. Then, participants were asked: *When comparing two attributes, which one do you believe is the most important for the success of a meeting?* With eight attributes, the twenty-eight (28) combinations of possibilities were given where participants responded with either *Yes* or *No*.

After each meeting, participants were also asked to complete *Questionnaire 2* (identified as *Q2* - see Appendix *F*) which prompted them about perceived impact for each investigated attribute. The first of two sets of questions was designed using scales to determine how participants viewed each attribute in relation to the technology, the process, the group, and their personal experience. A value of +1 *Strongly Disagree* to +6 *Strongly Agree* was entered by participants for thirty-two (32) sub-questions. By having no natural middle (e.g. an odd numbered scale

where a number is in the middle), respondents had to make a choice and select from the upper or lower portion of the scale, thereby outlining preferences. For the second set of questions (pages 3 and 4), an open-ended format allowed respondents to express in their own words what key elements were determining factors for what transpired during the meeting.

Questionnaire 3 (identified as *Q3* - see Appendix *G*) was administered after the second meeting, and only after participants had completed *Questionnaire 2* for the second time. *Questionnaire 3* concentrated on asking participants to compare the two meetings they attended and evaluate the total experience. For consistency, and to keep all major functions separated, *Phase 2* (see Figure 5) began only after completion of *Phase 1*.

George et al. (1992), when investigating a scripted facilitator scenario (previously planned steps to follow during the meeting), found that facilitated groups developed greater decision quality but with less consensus. For this research, two scenarios were developed in conjunction with the *Group Process Approach* on group problem formulation as described by Niederman and DeSanctis (1995). Consistent with their study, the nominal group technique provided the following guide for facilitation:

Table 9 **Nominal Group Technique - Facilitation Guide**

- 1 - Private generation of ideas (e.g. cause, issues, definition, options);
- 2 - Public display of all ideas and discussion;
- 3 - Ideas can be added, deleted or merged;
- 4 - Ideas privately evaluated using a rating, ranking or voting scheme;
- 5 - Results displayed and discussed;
- 6 - Group decides to repeat steps 3 to 5, or develop a common problem definition.

While the information is reported by meeting, group, scenario, attribute, and Task Facilitative Form, similarities and differences in these categories were presented on a continuum, to display the margin of difference. Text type open-ended questions from *Questionnaire 2* and *Questionnaire 3* were scrutinized, and reported, first, by attribute, and second, for the study as a whole.

4.2 Case Study Design

Zigurs (1992) outlined various potential methods applicable to GSS research and emphasized the importance of choosing an *appropriate* method. Case study research places greater emphasis on a full contextual analysis of fewer events or conditions and their interrelationship (Cooper and Emory, 1995). Yin (1989) outlined five necessary components for this type of research design, of which the first is the research question (mentioned in section 3.0 - *Research Question*). The following four components are discussed - research question's propositions, unit(s) of analysis (in sub-section 4.3 - *Analysis and Measurement Issues*), logic linking the data to the propositions, and criteria for interpreting the findings.

4.2.1 Propositions and Associated Attributes

Gage Canadian Dictionary (1979) described propositions as statements affirming or denying something, and are known to direct attention on what should be examined within the scope of study (Yin, 1989). Developed in a manner where each proposition focuses on attributes worth considering, the identification of these attributes was first taken from DeSanctis and Gallupe (1987), Jessup and Valacich (1993), and Zigurs (1992). Advantages and disadvantages established in these papers stressed the importance of attributes for determining success or failure of meetings. In addition, based on the benefits and disadvantages of working in groups (reported in sub-section 2.1 - *Group Decision-Making*) and common meetings problems (outlined by Clawson and Bostrom (1996)), the attributes *attentiveness, control, interaction, motivation, outcome, participation, satisfaction, timeliness* were judged important for answering the research question. When writing about group problem solving techniques, DeSanctis and Gallupe (1987) stressed the importance of some of the selected attributes by outlining quotes from previous research. The attributes are shown below in italic.

The Delphi method and Nominal Group Technique have been shown to increase group productivity and *satisfaction* over freely *interacting* groups (Van de Ven and Delbecq, 1974). In general, research suggests that adding structure to the decision process positively impacts decision *outcomes* (Smith, 1973). The effect of structured approaches appears to be increasing member *participation* (White et al., 1980), focusing on the problem, avoiding conformity pressures, and keeping the group on track (Gallupe, 1985).

For this study, the propositions served as focal points for the identification of change in the participants' perceived level of impact when comparing the two Task Facilitative Forms. For example, using the attribute attentiveness, the format of the proposition was as follows:

The level of attentiveness changes with the different forms of the Task Facilitative Support Mode.

Serving as a base for answering the research question, propositions and their corresponding attributes are further discussed in section 5.0 - *Findings*. For each attribute, this study presents dictionary definitions, researchers' previous work, meaning for this study, the proposition, questions posed, and post-meetings analysis and results.

4.2.2 Selection of Facilitator and Chauffeur

To ensure an acceptable level of consistency, one professional facilitator was required for the eight meetings, and one chauffeur for four of those meetings. The facilitator had to be well-versed in the functions of facilitation, and both the facilitator and chauffeur had to be able to adapt quickly to the use of MeetingWorks as a meeting support tool. A professional with substantial experience in facilitation was selected. To ensure professional facilitative support, three informational/training sessions on the use of MeetingWorks and the expected functions of both facilitator and chauffeur were provided. The facilitator

also learned how to conduct the meetings when required to perform both roles.

The functions of the chauffeur were performed by the researcher under the direction of the facilitator and where the chauffeur initiated the display of a step only when prompted by the facilitator.

4.2.3 Selection of Participants

To ensure an appropriate number of participants for the selection process, students from an undergraduate *Decision Making and Support Systems* course were chosen; and an agreement was reached with the course professor for approval and compensation for students' participation. Appendix *H - Selection of Participants* describes the procedure which was used to identify the participants and to assign them to groups.

4.2.4 Development of Scenarios

Case study research, which focuses more on contextual analysis of conditions and their interrelations, can provide insight for problem-solving and evaluation. This form of research is appropriate for business research, and for computer-based support systems in business studies (Cooper and Emory, 1995). Niederman and DeSanctis (1995) used the case study approach when comparing the structured-argument approach with the group process approach on group problem formulation. Whiteley and Garcia (1996) used two cases when they studied the facilitator and chauffeur interaction in their *EDASA Model*. Table 10 presents the

basic requirements used for the design of the two scenarios (Appendices *A* and *B*).

Table 10 Selection of Scenarios - Basic Requirements

- 1 - Limited technical terminology;
- 2 - Use of all key elements of the technology;
- 3 - Elements present for subsequent analysis of the selected attributes;
- 4 - Meeting with a duration of approximately one hour; and
- 5 - Use of a problem featuring options.

A single, well-designed case study can provide a major challenge to a theory, and be a source of new hypotheses and constructs simultaneously (Cooper and Emory, 1995). For this study, two scenarios were designed to ensure that all attributes being evaluated were included and identifiable. In essence, the two scenarios needed to be similar in structure and the problem within the domain of the participants' expertise; thereby, allowing for sound comparison between Task Facilitative Forms. This was necessary so that other variables would not be prominent and impact the findings of this study.

4.2.5 Selection of Technology

Several factors were important in the selection of a Meeting Support System (MSS) for this study. System responses needed to be non-incidental since the attribute *Timeliness* was being analyzed. To hold both meetings and answer the research question, the technology also needed to allow segregation or integration

of tasks of both the facilitator and chauffeur. *MeetingWorks* software met these conditions and was selected. More specifically, this tool allowed participants to enter their ideas anonymously by way of a computer terminal where all ideas could be analyzed and reported by group. Among other options, *MeetingWorks* allowed for the creation of scripts (e.g. agenda) with steps such as generation of ideas and multiple criteria analysis. In addition, this software produced several types of graphic images which outlined group results, level of consensus and level of variability.

4.2.6 Questionnaire Design

As mentioned in sub-section 4.1 *Research Process*, three types of questionnaires were used in this research where *Questionnaire 1* (Appendix E) was given to participants prior to a group's first meeting, *Questionnaire 2* (Appendix F) after each meeting, and *Questionnaire 3* (Appendix G) after the second meeting of a group. This sequence provided the opportunity for the design of questions to outline participants' feelings about each attribute in relation to the first meeting, the second meeting, and the experience as a whole. Four major areas for developing questionnaires - question content, question wording, response structure, and question section (Cooper and Emory, 1995) - serve as the base for expressing the general study rationale.

4.2.6.1 Question Content

With three participants per group and four groups, approximately 2,000 responses were gathered for the eight attributes from 48 questionnaires (twelve for each of *Questionnaires 1, and 3*, and twenty four for *Questionnaire 2*). To receive targeted information linked to the propositions and associated attributes, questions were designed to allow respondents to express personal feelings about the technology, the group, and the process. Overall, respondents' characteristics and ranking and rating scale questions were the main tools for data gathering. Respondents were also given the opportunity to comment, recommend or critique all aspects of the proceedings. No weights were assigned to questions or comments.

4.2.6.2 Question Wording

Nunamaker et al. (1989) used questions such as: *I am satisfied with the computer-aided process* and *The group's problem solving process was satisfying*. In a different manner, using a five point scale, Hitchcock et al. (1994) employed two key questions to elicit multiple responses. For example, *How well were these benefits provided?* was one of the key questions used to solicit answers to eight phrases such as *Helped set clear objectives* and *Improved teamwork and morale*. The second key question *How much do you agree with the following questions?* was posed prior to nine phrases such as *Facilitator was beneficial to the session*.

Although the same format was used in *Questionnaires 1, 2 and 3* to ensure that participants could make good judgments, the issues of leniency, central tendency and halo effect (defined by Cooper and Emory (1995) as *a systematic bias that the rater introduces by carrying over a generalized impression of the subject from one rating to another*) required consideration. Questions were designed so that raters would not score too easy or too hard; would select extremes as appropriate; and would not exercise bias throughout the questionnaire. For example, to enhance validity and minimize the halo effect, some of the rating scale questions were written in a negative format. For these questions, a response of two (2) represented a five (5) in the analysis stage. In addition, the use of rating scales with no middle number obligated participants to select from either the upper or lower portion of the scale.

4.2.6.3 Response Structure

Nunamaker et al. (1989), using a scale of one (1) to five (5) on post-session questionnaires, asked respondents if they strongly disagreed or agreed related to satisfaction. Cooper and Emory (1995) found that there is little conclusive support for choosing a three-point scale over a five or more point scale. They further stressed that more points on a scale provide an opportunity for greater sensitivity of measurement. Due to the high level of response and number of attributes being investigated, a six-point rating scale from one (1) to six (6) was used in this study to provide room for response discrimination.

4.2.6.4 Question Sequence

To reduce bias and central tendency, questions were randomly mixed, and where possible, not labelled as being a response for a particular attribute. For example, questions number 6, 16, 21 and 28 in *Questionnaire 2* were designed to analyze the attribute *interaction*. Where possible, the word interaction was suppressed and a synonym used to capture the essence of the question. The purpose was to ensure that respondents would focus on a particular question and not on previous responses. Appendix I - *Post-Meeting Results - Group Totals - Aggregation and Averaging* presents, by attributes and Task Facilitative Forms, the corresponding question numbers and the groups' responses.

4.2.6.5 Questionnaire 1 (Appendix E)

Participants filled out *Questionnaire 1* prior to their first meeting. The main purpose was to gather basic information and learn about their general knowledge of technology. Two additional questions provided insight on how everyone felt about the attributes, namely rating the *Importance of attributes for the success of a meeting* and *When comparing two attributes, which one do you believe is the most important for the success of a meeting*. For this latter question, all combinations for the eight investigated attributes were assessed allowing for receipt of twenty-eight responses per participant.

4.2.6.6 Questionnaire 2 (Appendix F)

In conjunction with the information gathered from *Questionnaire 1*, each participant responded after each meeting to four more questions per attribute. Altogether, when considering that twelve participants attending each two meetings, this first part of *Questionnaire 2* provided 768 responses. Each of the four questions per attribute were linked to four areas - technology, personal impression, perception about the group, and management of the meeting. The second part, which contained nine open-ended questions, allowed for increased freedom of response, and provided an additional 216 responses for a total of 984 responses from this questionnaire.

4.2.6.7 Questionnaire 3 (Appendix G)

To compare the experience of the first and second meetings, participants were questioned about each attribute, and asked to comment on the total experience. This activity was performed after a group's second meeting and after the participants had completed *Questionnaire 2* for the second time. By collecting responses to identical questions as in *Questionnaire 1*, changes in perception of importance by attribute provided additional insight. Finally, six open-ended questions allowed participants to make comparisons and comment on this study.

4.3 Analysis and Measurement Issues

Jessup (1987) recommended that researchers use individual, group, and situational levels of analysis while Vogel et al. (1989-90) stressed the importance of addressing issues related to the individual, the group, the project, and the organization. Based on these recommendations, five methods of analysis were found appropriate for this study. As outlined in Table 11 - *Methods of Analysis*, responses from the three questionnaires served for more than one of the methods used for data analysis and reporting. Analyzing data with more than one method allows for an improved analysis and better understanding of the results.

Table 11 Methods of Analysis

Methods of Analysis	Questionnaire 1		Questionnaire 2		Questionnaire 3		
	Question 1	Question 2	Part 1	Open-Ended Questions	Question 1	Question 2	Open-Ended Questions
Method of Paired Comparison		X				X	
Composite-Standard Method		X				X	
Aggregation and Averaging	X	X	X		X	X	
Pattern-Matching	X	X	X		X	X	
Explanation Building	X	X	X	X	X	X	X

4.3.1 Method of Paired Comparison and Composite Standard Method

Concentrating on *Questionnaires 1* and *3*, *questions number 2*, attributes were separately selected, analyzed, and reported at the group level for their perceived level of importance for the success of meetings. First, the *Method of Paired Comparisons*, which produces ordinal data, allowed participants to express themselves unambiguously by choosing between two attributes. With eight attributes, twenty-eight paired comparisons were made.

For improved interpretation, the *Composite-Standard Method* was used for converting this ordinal data to an interval scale. In essence, this method converted the frequencies of preferences into a table of proportions. Then, the normal curve table served to identify corresponding Z values. Finally, to eliminate existing negative scale values, Cooper and Emory (1995) suggested assigning zero to the lowest scale value and then add the absolute value of this lowest scale value to all others scale items. The source information was manipulated as presented in *Appendix J - Pre-Experimental Results - Composite Standard Method* and *Appendix K - Post-Experimental Results - Composite Standard Method*. The interpretation of results are included in the *Findings Section* under sub-section *5.3.2 - Attributes - Composite Standard Method* and presented in *Figure 17 - Pre and Post-Experimental Results - Composite Standard Method*.

4.3.2 Aggregation and Averaging Method

Zigurs (1992) explained that common practice [Chidambaram et al. (1990-91), Easton et al. (1990)] is to collect individual-level data by questionnaire, and average the scores of all members to obtain a group-level data point. Where applicable, this practice was used on quantifiable data in this study. For example, perceptions of *Control* from one group were compared to perceptions from other groups. Similarities and differences were identified. Aggregating all responses in the same manner as outlined by Zigurs (1992) provides useful information in comparing between scenarios, groups, meetings, and Task Facilitative Forms.

4.3.3 Pattern-Matching Method

Viewed as a promising approach in case study research (Yin, 1989), all attributes were used as points on a two-dimensional grid with values of perceived importance. To develop the pre-research pattern, data was taken from *Questionnaire 1 - Question 1*, where each attribute was rated from one (1) to six (6). Following the conduct of the two meetings by one group, the post-research pattern was developed using data collected from *Questionnaire 3* which provided responses to the same questions as *Questionnaire 1*. With this information, two dimensional grids were developed to identify if there were changes in the perceived level of importance, by attribute and by group.

4.3.4 Explanation-Building Method

To help bring all of the data together, the *Explanation-Building Method* was used to explain what transpired and what could be learned from this research. With this method, the text comments from open-ended questions were incorporated as part of the findings from the quantitative data. Consistent with common practice as outlined by Zigurs (1992), data was displayed on a spreadsheet in a manner to identify and report trends, similarities and differences. This method provided the necessary structure and cross-checking to report comments taken from open-ended questions and findings from other types of questions.

4.3.5 Unit of Analysis

In case study research, a method for determining the unit of analysis depends on the definition of the main research question, the propositions, and analysis of cases or scenarios, if attention is given to sub units. Known as an important device for focusing a case study inquiry (Yin, 1989), embedded case study design was chosen because it allows for the examination of specific phenomena related to each unit of analysis. Although comparisons by attribute, by meeting, by participant, by scenario and by form of the Task Facilitative Support Mode were performed, the groups were the primary units of analysis since they were key reference points throughout this research.

4.3.6 Statistical Significance

Cooper and Emory (1995) advised that when a sample is used, there is a tendency that it will vary from its population. In some cases, this difference is not significant and accepted as a normal fluctuation. However, in other experiments, statistical significance was present and interpretation had to be carefully assessed and reported. To determine if statistical significance existed for this three-factor factorial experiment, the *Randomized Complete Block Design* was deemed appropriate for the analysis of the eight attributes.

By using this *analysis-of-variance* (ANOVA) model, all effects can be tested against experimental error (Ostle, 1963). The use of this model was possible since participants were selected randomly, thus assuring homogeneity, and allowing proper use of the participants' data as replicates. For this research, the level of significance was set at $\alpha = 0.01$.

5.0 FINDINGS

This study was conducted to identify how participants of computer-supported meetings viewed the two different forms of the Task Facilitative Support Mode - the Facilitator-Driven Form and the Facilitator/Chauffeur-Driven Form. This section first outlines the environmental context in which the experiment took place and states key elements of what transpired during the conduct of the eight meetings. This is followed by an in-depth analysis and reporting of the eight attributes and the Task Facilitative Forms using responses from post-meeting questionnaires. In this sub-section, statistical significance is first discussed to emphasize normal fluctuations and areas requiring additional analysis. Then, for each attribute, an appropriate definition is outlined, followed with interpretations and use by other researchers, this paper's use of a definition to explain the attribute being investigated, corresponding proposition, questions posed, and associated analysis and results.

The next sub-section compares pre and post-experimental data where the attributes were further analyzed to identify the groups' perceived level of importance. The fourth sub-section addresses the research question by presenting an overall synopsis by Task Facilitative Form. Finally, statistical tests outline the strength of the results.

5.1 Environmental Context

As with any experiment, some unplanned events can occur. While overall, the meetings went as planned, two incidents deserve mention. One incident involved equipment failure and the other concerned a software problem. Fortunately, these difficulties did not adversely affect the experiment due in most part to the flexibility of the participants and the professional conduct of the Facilitator. These incidents are described in greater detail in Appendix *L - Incidents During the Conduct of Meetings*.

5.1.1 Characteristics of the Groups

To provide additional insight, some personal information was gathered about the participants. More specifically, information about gender and age is discussed (see section 4.1 - *Research Process*). Since these variables were not further analyzed and considered, they have not been referred to elsewhere in this study.

5.1.1.1 Gender and Age Categorization

Table 12 presents the gender composition of the four groups. It was a coincidence that the groups held the four possible gender combinations for a three person group.

Table 12 **Gender by Group**

Gender	Group 1	Group 2	Group 3	Group 4
Male	1	2	0	3
Female	2	1	3	0

As mentioned in sub-section 4.1 - *Research Process*, independent variables such as *Gender by Group* (Table 12) and *Age Categorization by Group* (Table 13) were not evaluated in this experiment. Most of the full-time students participating were in the age group 21 - 25. However, with random selection, as depicted in Table 13, *Group 4* contained students in three different age groups.

Table 13 **Age Categorization by Group**

Age Group	Group 1	Group 2	Group 3	Group 4
18 - 20				
21 - 25	3	3	3	1
26 - 30				1
31 - 35				
36 - 40				
41+				1

5.1.1.2 Years Working with Computers

Participants had several years of experience with computers (Table 14 - *Years Working with Computers*). When looking at the totals by group in relation to the three types of locations, most gained their knowledge of computers from home and school. This information correlates well with Table 13 - *Age Categorization by Group* since most participants are young adults (early 20's) and have not yet had several years in the work force.

Table 14 Years Working with Computers

	Group 1	Group 2	Group 3	Group 4
At Home	23	15	19	18
At Work	10	4	7	15
At School	33	15	14	27

5.1.2 Duration of Meetings and Brainstorming Ideas

This sub-section presents some key information about the eight meetings of this case study research. Table 15 presents, by scenarios and groups, the total duration in minutes for each session. With a range of 38 to 114 minutes, certain elements were noticed which accounted for this time difference. In the longer sessions, several similar ideas were presented more than once during the brainstorming

exercise. This led to additional discussion and interpretation. For example, when trying to generate events using *Scenario B*, participants of a group discussed for several minutes if they should have *Fund Raising Pub* and *Pub* as one item or as separate items. Members of another group took approximately ten minutes to define the words *Banquets* and *Charity Ball*.

Table 15 **Duration of Meetings by Scenario**

Duration in Minutes	Group 1	Group 2	Group 3	Group 4	AVERAGE
Scenario A	82	66	92	38	69.50
Scenario B	102	110	114	81	101.75
AVERAGE	92	88	103	60	85.60

Furthermore, when comparing this information with the number of brainstorming ideas (Tables 17 and 18), and based on comments from participants, it may be that the number of ideas generated had a direct impact on the duration of the sessions. In fact, participants believed that such MeetingWorks tools as the *Cross Impact Analysis* and *Multiple Criteria Analysis* required substantial time and effort when there were a great number of ideas to consider.

Table 16 - *Duration of Meetings by Task Facilitative Form* presents, by group and by Task Facilitative Form, the duration of the eight meetings in minutes.

Although the ranges between groups differs, the average meeting times for both Task Facilitative Forms were almost equal (85.7 minutes versus 85.5 minutes).

Table 16 **Duration of Meetings by Task Facilitative Form**

Duration in Minutes	Group 1	Group 2	Group 3	Group 4	Average
Facilitator-Driven Form	82	66	114	81	85.70
Facilitator/Chauffeur-Driven Form	102	110	92	38	85.50
AVERAGE	92	88	103	60	85.60

For the two brainstorming exercises, as outlined in Table 17 and 18, the meetings with the higher number of ideas generated contained some duplication and aggregation. For example, when participants of one group were formulating ideas about business types using *Scenario A*, the term *Computer* appeared twice. In another instance, the terms *Restaurant* and *Cafe* were presented and later combined as one item for further evaluation. Overall, there were sufficient ideas to ensure a valid sample for the following steps such as cross impact analysis.

Table 17 **Brainstorming Ideas of Business and Events Types by Scenario**

Brainstorming Ideas	Group 1	Group 2	Group 3	Group 4	Total	Average
Scenario A Business Types	17	25	19	6	67	16.75
Scenario B Events Types	18	20	16	21	75	18.75
TOTAL	35	45	35	27	142	35.50
AVERAGE	17.50	22.50	17.50	13.50	71.00	17.75

Table 18 Brainstorming Ideas of Critical Success Factors by Scenario

Brainstorming Ideas of Critical Success Factors	Group 1	Group 2	Group 3	Group 4	Total	Average
Scenario A	6	9	12	8	35	8.75
Scenario B	9	18	14	12	53	13.25
TOTAL	15	27	26	20	88	22.00
AVERAGE	7.50	13.50	13.00	10.00	44.00	11.00

5.1.3 Participants' Perception of the Experiment

Several open-ended questions were posed to obtain an understanding of what transpired during the eight meetings. With a few exceptions, comments were positive and participants acknowledged the enjoyable and educational experience. Appendix *M - Participants' Perception of the Experiment* describes a debriefing based on the open-ended questions received from *Questionnaire 2*. Since the twelve participants each took part in two meetings, Appendix *M* contains either the actual phrases or the main thrust of the twenty-four responses for each question of *Questionnaire 2*.

5.2 Post-Meetings Analysis and Reporting

To provide a thorough analysis and reporting of the eight attributes in relation to the groups, this sub-section first presents the statistical findings which point out areas where statistical significance exists. Then, based on the data gathered after each of the eight meetings, a detailed analysis of attributes is presented.

5.2.1 Statistical Findings

Appendices *O* to *V* display for each attribute two tables containing the source information and final results. For the attributes *Control* and *Timeliness*, no statistical significance supports that the experiment was consistently controlled and time managed. For example, the analysis of *Replicates* for the attribute *Control* produced a $F=0.94$ which is less than $F_{.99(2,14)}=6.51$. Based on these findings, it can be reported that since there was no statistical significance outside of normal fluctuations, there was no *Control* effect on the replicates. The same interpretation applies for the interaction of factors. For instance, the *AB - Facilitative Forms* and *Scenarios* interaction gives a $F=0.00$ which is less than $F_{.99(1,14)}=8.86$. With no statistical significance, it can be said that there was no *Control* effect when comparing these factors and their interaction. For the attributes *Attentiveness*, *Interaction*, *Motivation*, *Participation* and *Satisfaction*, statistical significance was also not found. Therefore, since there are no abnormal fluctuations, the marginal differences noticed, as outlined in Appendices *O*, *Q*, *R*, *T* and *U*, were acceptable.

However, for the attribute *Outcome* (Appendix S), the interaction *BC - Scenarios* and *Meeting Sequence* produced a $F=9.92$ which is more than $F_{.99(1,14)}=8.86$. This statistical significance implies that there was a difference which is more than normal fluctuation. To outline the effect, Table 19 displays the *Scenarios* and *Meeting Sequence* effects for the attribute *Outcome*. Results show that participants preferred *Scenario B* for the first meeting (28.9) and *Scenario A* for the second meeting (27.7). For example, the value 7.8 in Table 19 came from Appendix S by adding *P1- First Meeting* using the Facilitator-Driven Form (4.3) for Scenario A, and *P1 - First Meeting* using the Facilitator/Chauffeur-Driven Form (3.5) for Scenario A. Aside from the main effects on *B - Scenarios* and *C - Meeting Sequence*, where no value could be determined since the interaction *BC* was significant, all other effects were not significant.

Table 19 Outcome - Scenarios and Meeting Sequence Effect

Replicates	Scenario A	Scenario B
P1 - 1st Meeting	7.8	9.8
P1 - 2nd Meeting	10.1	7.8
P2 - 1st Meeting	5.6	9.8
P2 - 2nd Meeting	8.8	8.0
P3 - 1st Meeting	7.6	9.3
P3 - 2nd Meeting	8.8	9.0
1st Meetings	21.0	28.9
2nd Meetings	27.7	24.8

5.2.2 Analysis of Attributes

Where possible and to provide a thorough analysis and reporting of the attributes in relation to the Task Facilitative Forms, this sub-section presents different sources of data on one common scale. Information about the perception of participants is outlined by attribute, group, and Task Facilitative Form. The following process has been applied to provide a clear and focused reporting for each attribute:

Table 20 **Post-Meetings Data Analysis and Reporting - Process**

- 1 - Definition taken from *Webster's Ninth New Collegiate Dictionary (1983)*;
- 2 - Description of how the attribute is considered in the literature;
- 3 - How this study defines the attribute;
- 4 - A proposition which strengthens the direction and scope of this research;
- 5 - The four questions which were posed (from Questionnaire 2);
- 6 - Using the Aggregation and Averaging, Pattern-Matching, Explanation-Building methods, appropriate tables and figures served as impetus to outline results which are presented by group and by Task Facilitative Form. When necessary, these numbers were rounded to the nearest two digit decimal point;
- 7 - General comments were taken from open-ended questions;
- 8 - Based on the findings, an answer to the previously stated proposition is given; and
- 9 - Discussion/Conclusion.

Finally, the last part of this sub-section focuses on the relative similarities and differences of attributes by Task Facilitative Forms.

5.2.2.1 Attentiveness

Definition: “Observant to what someone is doing;
Offering attention in or as if in the role of a suitor;
A condition of readiness;
Selective narrowing/focusing of consciousness and receptivity”

Friedman (1994) repeated Hargreaves’ (1972) earlier findings that teachers evaluate students based on instruction which is partially judged by the degree to which they pay attention. Friedman, when interviewing teachers and groups of students using scale items, considered this *Attentiveness* as reflective of the academic aspects of the relationship (students’ willingness and receptiveness to learning). From another perspective, Niederman et al. (1996) outlined that facilitators’ perceived or expected benefits in computer-supported meetings are, among others, better management of attention and task focus.

For this study, information on *focus on the task at hand* was collected using questionnaires. Participants were asked about the facilitator, the technology and their relative assistance in keeping both themselves and the group focused. In other words, was it difficult for participants to stay focused?

Proposition: “The level of Attentiveness changes with the different forms of the Task Facilitative Support Mode”.

To address this proposition, the following four questions were posed:

- Do you believe that ...
- ... everyone was focussed at solving the problem?
- ... it was easy to stay focussed on solving the problem?
- ... the use of technology increased attentiveness?
- ... the Facilitator did not keep everyone focussed?

Based on the information received and analyzed, Table 21 and Figure 6 -

Attentiveness - Post-Meetings Results were produced and a careful look at group averages by Task Facilitative Form was necessary. A value of 4.96 for the Facilitator-Driven Form in comparison to a 4.50 for the Facilitator/Chauffeur-Driven Form outlines approximately a ten percent (10%) difference. In essence, although *Attentiveness* was not seen as a problem or a concern, it can be noted that there was a preference for the Facilitator-Driven Form. Participants mentioned that the problem needs to be clearly stated and appropriate for these types of meetings. Failure to meet these requirements would decrease the level of interest thereby reducing *Attentiveness* during the meetings. Other measures such as ensuring an appropriate meeting environment, and scheduling strategic pauses, could prove useful in keeping everyone focused.

Table 21 Attentiveness - Comparative Analysis by Group

ATTENTIVENESS	Group 1	Group 2	Group 3	Group 4	Average
Post-FD Meeting Data	4.75	5.50	4.75	4.83	4.96
Post-FCD Meeting Data	4.17	5.00	4.67	4.17	4.50
AVERAGE	4.46	5.25	4.71	4.50	4.73

In summary, the level of *Attentiveness* was seen as positive since all numbers are located in the upper portion of the graph, as presented in Figure 6. A total value of 4.73 represents a fairly high standing and indicates that *Attentiveness* was perceived as acceptable and good for both Task Facilitative Forms.

5.2.2.2 Control

Definition: “Power or authority to guide or manage”.

Niederman et al. (1996) reported that facilitators’ critical success factors for meeting success contain elements of *Control*. They outlined that good process skills, flexibility, leadership and management of conflict are necessary while technology must be used to facilitate progress and not used to control focus.

For the facilitator, losing control of a meeting can be disastrous. This study tried to determine if the Facilitator-Driven Form was more prone to this problem as compared with the Facilitator/Chauffeur-Driven Form. For example, did participants perceive that the facilitator had the pulse of the meeting or was the dual role of facilitator and chauffeur too demanding? Participants were also asked if they believed that technology was a factor, and if they felt that the group reacted positively to the commands set out by the facilitator?

Proposition: “The level of Control changes with the different forms of the Task Facilitative Support Mode”.

To verify this proposition, participants were asked the following questions:

Do you believe that ...

- ... this meeting was kept under control at all time?
- ... all adhered to the structured format of the meeting?
- ... the meeting was always kept under control?
- ... with technology, meetings are harder to control?

In reference to Table 22 and Figure 7 - *Control - Post-Meetings Results*, participants gave this attribute good ratings for the two Task Facilitative Forms. More specifically, they believed that *Control* was better when using the Facilitator-Driven Form (value of 4.73) in comparison to the Facilitator/Chauffeur-Driven Form (value of 4.38).

Table 22 Control - Comparative Analysis by Group

CONTROL	Group 1	Group 2	Group 3	Group 4	Average
Post-FD Meeting Data	4.67	4.67	4.92	4.67	4.73
Post-FCD Meeting Data	5.00	3.83	5.25	3.42	4.38
AVERAGE	4.84	4.25	5.09	4.05	4.55

When looking at responses made from open-ended questions, participants stated that *Control* needs to be as transparent as possible, and felt that the meetings were well managed. An overall value of 4.55 (Table 22) reinforces the point that *Control* was given a good rating, and requires careful consideration for ensuring the success of computer-supported meetings.

5.2.2.3 Interaction

Definition: “Mutual or reciprocal action or influence”.

McGrath (1991) observed that *group interaction process* refers to the flow of work in groups at a micro level, and saw a unit of *Interaction* as a single act or input of a group member (verbal and non-verbal communication). Mabry and Attridge (1990) noticed differences between tasks like discussion versus problem-solving, and stressed that these types of interaction account for over sixty percent (60%) of the observed variance.

To measure *Interaction* among participants, opportunities for participants to interact (i.e. asking open-ended questions and giving ample time to respond) were provided at specific intervals. Questions such as *What choices do we have to solve this problem?* or *What are the advantages of implementing this option?* were put forth to stimulate interaction. In general, participants were asked if the management of the meeting helped them to interact, if the process used was appropriate to foster interaction, and if technology aided interaction.

Proposition: “The level of Interaction changes with the different forms of the Task Facilitative Support Mode”.

To verify if this proposition is accurate, four following questions were given to participants following the conduct of meetings:

Do you believe that ...

- ... the interaction between participants was productive?
- ... the productive debate between participants was good?
- ... the use of technology increased interaction?
- ... the interaction was well managed by the Facilitator?

According to the data received which is presented in Table 23 and Figure 8 - *Interaction - Post-Meetings Results*, participants gave this attribute the highest group marks (from a value of 4.00 to 5.00). In addition, the results outline that the Facilitator-Driven Form (value of 4.69) was preferred in comparison to the Facilitator/Chauffeur-Driven Form (value of 4.46).

Table 23 Interaction - Comparative Analysis by Group

INTERACTION	Group 1	Group 2	Group 3	Group 4	Average
Post-FD Meeting Data	4.67	4.58	4.92	4.58	4.69
Post-FCD Meeting Data	4.00	5.00	4.25	4.58	4.46
AVERAGE	4.33	4.79	4.57	4.58	4.57

Based on the general comments and the total value of 4.57 (Table 23), participants felt that the *Interaction* was good. For example, they mentioned that this was mostly due to the way the Facilitator managed the meetings, and due to the added interest in participating in computer-supported meetings.

5.2.2.4 Motivation

Definition: “To provide with a motive;
Stimulus, or influence, incentive, drive”.

When outlining the issues and concerns of facilitators regarding computer-supported meetings, Niederman et al. (1996) concluded that a critical success factors for effective meetings is *Motivation*. As suggested by the above-mentioned definition, all members of a group must want to produce a positive effect. As another example of a research concerned with *Motivation*, Zweighart et al. (1996) measured its impact in relation to the effectiveness of hospital volunteers.

For this study, participants were asked if they believed the facilitator kept everyone motivated, and if they would like to be involved in this type of meeting again. In addition, they were asked if they felt that the use of technology was or was not a motivator.

Proposition: “The level of Motivation changes with the different forms of the Task Facilitative Support Mode”.

The following four questions were asked:

- Do you believe that ...
- ... you would like to attend more of these types of meetings?
- ... the Facilitator kept everyone motivated?
- ... we all would want to attend more meetings of this type?
- ... the use of technology increased motivation?

Based on the data received, presented in Table 24 and Figure 9 - *Motivation - Post-Meetings Results*, both Task Facilitative forms received similar ratings.

When comparing to other attributes being investigated in this study, *Motivation* was perceived as having the smallest difference between Task Facilitative Forms (2.4%). A value of 4.29 for the Facilitator-Driven Form and 4.17 for the Facilitator/Chauffeur-Driven Form outlines this marginal difference.

Table 24 **Motivation - Comparative Analysis by Group**

MOTIVATION	Group 1	Group 2	Group 3	Group 4	Average
Post-FD Meeting Data	4.58	4.42	4.00	4.17	4.29
Post-FCD Meeting Data	4.75	4.17	4.08	3.67	4.17
AVERAGE	4.66	4.30	4.04	3.92	4.23

General comments provided by participants acknowledged the positive impact for the attribute *Motivation*. For example, participants stated that their experience using this technology was motivating, and believed that the meetings were more interesting than the conventional ones they had attended. In favouring a

technology-assisted meeting, they also added that *Motivation* played a key role. While a marginal change in *Motivation* was apparent in favour of the Facilitator-Driven Form, a total value of 4.23 outlines that participants liked these types of computer-supported meetings, and would welcome the opportunity to participate again. Overall, irrespective of the Task Facilitative Form being used, a positive impact on *Motivation* was recognized and acknowledged.

5.2.2.5 Outcome

Definition: "Something that follows as a result or consequence".

This attribute has been treated in different ways by researchers. Benbasat and Lim (1993) found that studies have investigated *Outcome* as decision quality.

When concluding that GDSSs' differences are self-evident, Eden and Ackermann (1996) stressed that the outcomes expected are seen as decisions made, decisions recommended, number of ideas generated, and information gathered.

For this research, participants were asked if they believed that technology helped them find a solution, and asked to state their feelings about the accepted outcome. In addition, responses about strong support in the group for the proposed solution assisted in better understanding the perceptions of participants.

Proposition: "The Quality of Outcome changes with the different forms of the Task Facilitative Support Mode".

To verify this proposition, the following four questions were asked after each meeting:

- Do you believe that ...
- ... the Facilitator did not help in solving the problem?
- ... technology helped us in solving the problem?
- ... few participants considered the problem solved?
- ... the final outcome is the right decision?

As presented in Table 25 and Figure 10 - *Outcome - Post-Meetings Results*, participants of *Groups 1* and *2* believed that the quality of the *Outcome* was better when using the Facilitator/Chauffeur-Driven Form. With equal or nearly equal ratings produced, *Groups 3* and *4* believed that the quality of *Outcome* was independent of the Task Facilitative Form used.

Table 25 **Outcome - Comparative Analysis by Group**

OUTCOME	Group 1	Group 2	Group 3	Group 4	Average
Post-FD Meeting Data	2.92	4.42	4.75	4.08	4.04
Post-FCD Meeting Data	4.17	4.83	4.75	4.00	4.44
AVERAGE	3.54	4.62	4.75	4.04	4.24

A moderate difference in the quality of *Outcome* was perceived in favour of the Facilitator/Chauffeur-Driven Form. Based on comments from participants, the quality of *Outcome* was perceived for some as being better when a meeting is conducted with a facilitator and computer-supported tool. For example, a participant from *Group 2* mentioned - *Technology improves the quality of the decision*, while a participant from *Group 1* said - *I don't believe that it (technology and a facilitator) improves the quality of the decision, but it does make the process of reaching a final decision easier*. Overall, participants mentioned an improvement in the quality of the decision, and believed that there was a change in the quality of *Outcome* when comparing Task Facilitative Forms.

5.2.2.6 Participation

Definition: "To have a part or share in something".

While the word *Participation* can mean different things (people involved in a group discussion or attending numerous meetings), there seems to have been consistency when researchers studied GSS. Clawson and Bostrom (1996) in *Critical Facilitator Role Dimensions* saw this attribute as ensuring equal opportunity for participation. They presented limited participation as not acknowledging or using individual differences. DeSanctis and Gallupe (1987) agreed with what White et al. (1980) maintained that *Participation* represents increased involvement in a meeting.

This study defines this attribute to mean active involvement in group discussions. Participants of a meeting were asked how they felt about their opportunities for contribution, how technology helped, their opinions about participation within the group, and if they felt the facilitator (and chauffeur where applicable) helped in promoting participation.

Proposition: "The level of Participation changes with the different forms of the Task Facilitative Support Mode".

To address this proposition, the following four questions were asked:

- Do you believe that ...
- ... the Facilitator ensured continuous participation?
- ... everyone did not get the chance to contribute?
- ... you had the chance to fully contribute?
- ... the use of technology increased participation?

Based on data received after each meeting, groups gave *Participation* the highest overall rating (4.90). The averages outlined in Table 26 and Figure 11 - *Participation - Post-Meetings Results* show that participants believed that *Participation* was key for the success of the meetings they attended. This is substantiated by the high values for the Facilitator-Driven Form (5.00) and the Facilitator/Chauffeur-Driven Form (4.81). Overall, participants were satisfied with their participation level and everyone's contribution.

Table 26 Participation - Comparative Analysis by Group

PARTICIPATION	Group 1	Group 2	Group 3	Group 4	Average
Post-FD Meeting Data	4.58	5.25	5.33	4.83	5.00
Post-FCD Meeting Data	4.33	5.42	4.67	4.83	4.81
AVERAGE	4.45	5.34	5.00	4.83	4.90

5.2.2.7 Satisfaction

Definition: “Contentment; A source or means of enjoyment”.

Based on responses from post-session questionnaires and interviews to obtain a broader range of personal impressions, Nunamaker et al. (1989) evaluated user *Satisfaction* with utilization rate of the GSS. They emphasized that experimental studies generated mixed results regarding user *Satisfaction* with GSS. For instance, Nunamaker et al. (1989) reported that Applegate (1985) had detected a high level of *Satisfaction* while Beauclair (1987) noticed no difference. Benbasat and Lim (1993) viewed this attribute differently where they mentioned that a sufficient number of studies using GSS have investigated *Satisfaction with Outcome*. They further mentioned that three satisfaction-based dependent variables were studied using GSS, namely *Satisfaction with Outcome*, *Satisfaction with process*, and *confidence with Outcome*.

For this study, following each meeting participants were asked if they were satisfied with the use of technology, the facilitator and chauffeur's contribution to the process, the group's satisfaction, and their overall satisfaction level. In other words, this study investigated *Satisfaction with process*, *with technology*, *with group members*, and *overall personal Satisfaction*.

Proposition: "The level of Satisfaction changes with the different forms of the Task Facilitative Support Mode".

To verify this proposition, the following four questions were asked:

- Do you believe that ...
- ... the use of technology increased satisfaction?
- ... everyone seemed to like the experience?
- ... it was not beneficial to hold a meeting in this format?
- ... you were satisfied with how the meeting was conducted?

In reference to Figure 12 - *Satisfaction - Post-Meetings Results*, the findings show that the groups' ratings were consistent when comparing the two Task Facilitative Forms. When looking at the averages presented in Table 27, a difference of 0.15 in favour of the Facilitator/Chauffeur-Driven Form shows that the level of *Satisfaction* was perceived as marginally preferred for these types of meetings. With a total value of 4.65, *Satisfaction*, which received the third highest rating (*Participation* was first and *Attentiveness* second), reinforces the point that participants were satisfied with what transpired during the meetings.

Table 27 Satisfaction - Comparative Analysis by Group

SATISFACTION	Group 1	Group 2	Group 3	Group 4	Average
Post-FD Meeting Data	4.58	5.17	4.50	4.08	4.58
Post-FCD Meeting Data	4.92	5.17	4.83	4.00	4.73
AVERAGE	4.75	5.17	4.66	4.04	4.65

5.2.2.8 Timeliness

Definition: "At a pre-determined time and duration".

The attribute *Timeliness* has been viewed and studied in different ways. For example, Niederman and DeSanctis (1995), who gathered data from videotapes of teams for noting start and end points, defined this attribute as the number of minutes a group spends formulating a problem. Benbasat and Lim (1993) remarked that *time to reach decision* has been commonly studied as a performance-related dependent variable.

For this research, while some activities were time-controlled during the meetings (ex: five minutes to organize ideas), other activities were not time-controlled. For example, the facilitator, based on the reaction and discussion with participants, could allow any amount of time for the generation of ideas. Following the meeting, respondents were asked about time in relation to the role of the facilitator and chauffeur, the technology, the impact on the group, and the process. More specifically, *Timeliness* stood for the appropriateness of time spent on each item of the agenda.

Proposition: "The level of Timeliness changes with the different forms of the Task Facilitative Support Mode".

To verify this proposition, the participants were asked to answer the following four questions after each of the two meetings they attended:

- Do you believe that ...
- ... time was well managed?
- ... technology helped in keeping the meeting on time?
- ... it was worth the time?
- ... we all felt it was worth the time to solve this problem?

As shown in Figure 13 - *Timeliness - Post-Meetings Results*, the Facilitator-Driven Form was preferred to the Facilitator/Chauffeur-Driven Form. Table 28 also outlines that *Timeliness* was preferred when the Facilitator-Driven Form was used (value of 4.67) in comparison to the Facilitator/Chauffeur-Driven Form (value of 4.13). In fact, when comparing with the other attributes, the largest gap between Task Facilitative Forms occurred with the attribute *Timeliness* (difference of 0.54). Overall, a rating of 4.40 indicates that participants were satisfied with the management of time, and that the attribute *Timeliness* also requires attention for the success of computer-supported meetings.

Table 28 Timeliness - Comparative Analysis by Group

TIMELINESS	Group 1	Group 2	Group 3	Group 4	Average
Post-FD Meeting Data	4.58	4.75	4.67	4.67	4.67
Post-FCD Meeting Data	4.58	3.83	5.00	3.08	4.13
AVERAGE	4.58	4.29	4.84	3.87	4.40

5.2.2.9 Attributes' Relative Similarities and Differences

Based on information gathered after each of the eight meetings, Table 29 presents the averages for each attribute by Task Facilitative Form. From the scale of plus one (+1) to plus six (+6) inclusively, some consistency of ratings by groups and Task Facilitative Forms were noticed. In fact, all averages were within approximately nineteen percent (+1 - [*Outcome* as lowest under FD 4.04 ÷ *Participation* as highest under FD 5.00] = 19%). The *Ranking* columns also display consistency when comparing the two Task Facilitative Forms. For instance, irrespective of the Task Facilitative Form, *Participation* received the highest standing when compared with other attributes, *Interaction* was seen as fourth, and *Motivation* finished in seventh place. Depending on the Task Facilitative Form, the other attributes received varied rankings.

Table 29 **Attributes' Relative Positive Impact - Post-Meetings Results**

	TASK FACILITATIVE FORMS			RANKING		
ATTRIBUTE	FD	FCD	Average	FD	FCD	Overall
Attentiveness	4.96	4.50	4.73	2	3	2
Control	4.73	4.38	4.55	3	6	5
Interaction	4.69	4.46	4.57	4	4	4
Motivation	4.29	4.17	4.23	7	7	8
Outcome	4.04	4.44	4.24	8	5	7
Participation	5.00	4.81	4.90	1	1	1
Satisfaction	4.58	4.73	4.65	6	2	3
Timeliness	4.67	4.13	4.40	5	8	6

From another angle, there was also a certain level of consistency. *Timeliness*, *Outcome* and *Motivation* were evaluated at the lower end for providing positive impact for both Forms, and *Attentiveness* was seen at the higher end. *Control* and *Satisfaction*, displayed the largest difference in attribute ranking when comparing the Task Facilitative Forms. For example, *Control* was perceived as relatively good, when using the Facilitator-Driven Form, and not as positive, when using the Facilitator/Chauffeur-Driven Form. For the attribute *Satisfaction*, the reverse was true.

Although some of the attributes stood out as providing a higher return, the general comments made by participants stress that all attributes were perceived as important, and should not be taken lightly when managing computer-supported meetings. In summary, based on the information received from *Questionnaire 2*, participants reported that all meetings were managed in a professional manner, and that the investigated attributes always required attention, irrespective of the type of tools used for the conduct of meetings.

5.3 Pre and Post-Experimental Analysis and Reporting

Reporting information from a different perspective, this sub-section contains two key sub-sections which focus on participants' perceived level of importance for each attribute. Based on responses from *Question 1* in *Questionnaires 1* and *3* and on the use of the *Pattern-Matching Method*, Figures 14, 15 and 16 show similarities and differences. Responses from *Question 2* in *Questionnaires 1* and *3* were used to produce interval scales. By using the *Method of Paired Comparison* and *Composite Standard Method*, (see sub-section 4.3 - *Analysis and Measurement Issues*), a different perspective highlights pre and post-experimental perceptions in regards to the importance of attributes for the success of meetings (Figure 17).

5.3.1 Attributes - Pattern-Matching Method

Figures 14, 15 and 16 provide an overall synthesis of information about attributes received prior to and after the experiment. Using a rating scale of one (1) to six (6), participants were asked to give a value to each attribute where six (6) represented an attribute perceived as most important for the success of meetings. Participants also had the option of rating all attributes as equal since they could use the same value more than once.

The following sub-section outlines the key findings:

5.3.1.1 Attentiveness

When comparing the results pre-experiment and post-experiment, only *Group 2* decreased the importance of *Attentiveness* while *Groups 3* and *4* believed that this attribute was more important. *Group 1* gave an unchanged rating. Based on data received where the *Aggregation and Averaging Method* was used, there was an increase in the perceived level of importance for the attribute *Attentiveness*.

5.3.1.2 Control

When comparing pre and post results, only *Group 3* increased the importance of *Control* while *Group 4* kept it unchanged. The other two groups registered a decrease in perceived level of importance. Overall, as outlined in Figure 16, the perceived importance for this attribute has remained relatively unchanged when comparing before and after results.

5.3.1.3 Interaction

While only *Group 1* decreased the importance of *Interaction*, the rating from *Group 3* substantially increased. Overall, there was a major rating increase of about 18 percent (ratings divided by scale size $(5.2 - 4.3) / (6 - 1)$) for the perceived level of importance for *Interaction*. In other words, participants believed that this attribute was more important than earlier perceived.

5.3.1.4 Motivation

While *Group 3* believed that *Motivation* was now more important, *Groups 2* and *4* believed the opposite. *Group 1* did not change their perception of importance for this attribute. When considering everyone's responses, a marginal increase was noticed.

5.3.1.5 Outcome

Among all attributes, the pre-experimental results for *Outcome* produced the largest differences between groups. In fact, all participants of *Groups 2* and *3* gave the highest rating while *Group 4* gave this attribute the second highest rating. Based on pre-experimental findings, only *Group 1* believed that quality of the *Outcome* was not one of the most important attributes for the success of meetings. However, when compared with the results received from the post-experiment questionnaires, a change in perception occurred for *Group 2* (a reduction from 6.0 to 3.7) and *Group 3* (an increase from 3.3 to 4.3). With near consistent rating by the other two groups, the post-experimental results suggest an overall low level of variability between groups, thereby showing a consensus of opinion for this attribute. In summary, there was a moderate decrease of twelve percent (12%) in the perceived level of importance for this attribute.

5.3.1.6 Participation

Prior to the experiment, *Group 3* rated *Participation* substantially lower in comparison to the other groups but still judged it as one of the four most important attributes. However, the rating received from post-experiment questionnaires was more consistent with other groups. This result shows that participants believed that *Participation* was more important than originally thought. When comparing the overall results from the quantitative data of the pre and post-experimental questionnaires, three groups increased the importance of *Participation* while the rating of *Group 2* remained unchanged. Overall, there was an increase of sixteen percent (16%) in perceived importance.

5.3.1.7 Satisfaction

Based on the pre-experimental data gathered, *Satisfaction* produced the largest difference of opinion when comparing groups. *Group 3* gave *Satisfaction* its lowest mark (1.7) which also happens to be the lowest mark given by a group for an attribute. On the other hand, *Group 4* gave *Satisfaction* its highest mark (5.7), and the second highest when looking at all scores given to attributes. When considering the post-experimental result, the level of variability was lowered thereby demonstrating a higher level of consensus. With the substantial change of opinions from all four groups, the average of pre and post-experimental results remained almost unchanged, and displayed only a marginal decline in the perceived level of importance for this attribute.

5.3.1.8 Timeliness

While this attribute was seen by *Groups 3* and *4* as more important than previously thought, the ratings from *Group 2* remained unchanged and *Group 1* showed a decrease. Overall, as displayed in Figure 16, there was a moderate increase in the perceived level of importance for this attribute.

5.3.1.9 Group Analysis

When concentrating on pre-experiment group trends and aside from the attribute *Satisfaction* which had a value equal to the average, *Group 1* displayed above-average results for all attributes except *Outcome* (Figure 14). *Group 2* gave an equal or higher rating over the other three groups while *Group 3* rated below everyone else for all attributes. The base for *Group 3* was closer to 3.0 while for the other groups, their base was closer to 4.5. It can be interpreted that *Group 3* originally believed that all these attributes played a less important role for the success of meetings. Depending on the attribute, *Group 4* scored over or under the attributes' averages. From another viewpoint, Table 30 presents pre-experiment choices, by group, for attributes they believed to be the most and least important for the success of meetings. Aside from *Groups 2* and *3* who chose the attribute *Outcome* as the most important and attributes *Satisfaction* and *Timeliness* which appeared twice as the least important in various groups, there was no clear consensus.

Table 30 **Attributes - Pre-Experiment Perceived Level of Importance**

	Group 1	Group 2	Group 3	Group 4
Most Important	Attentiveness	Outcome	Outcome	Satisfaction
Least Important	Satisfaction Timeliness	Control Timeliness	Satisfaction	Attentiveness

By focusing on these attributes, some other key information can be derived. For example, attributes *Control*, *Interaction*, *Participation* and *Timeliness* showed the lowest level of variability, thereby suggesting the best area of consensus among groups. In addition, *Satisfaction* yielded the largest difference of opinion between groups.

When looking at Figure 15 - *Post-Experimental Attributes Analysis - Pattern-Matching Method*, further interpretation was possible. When concentrating on trends in groups, the four group lines are symmetrical to the average line. Aside from the attributes *Outcome* and *Timeliness* which have values nearly equal to the average, *Group 1* displayed above average results for all attributes except *Satisfaction*. *Group 2* produced above average results for all attributes. For *Group 3*, the values of all attributes were closer to the average line. For this group, such a major increase in ratings emphasizes that all attributes being investigated were perceived as more important than originally thought.

Including reference to Table 30, Table 31 outlines post-experiment results where both *Groups 2* and *3* have changed what they considered to be the most important attribute. Their thinking shifted from believing that *Outcome* was the most important attribute prior to the experiment to *Interaction* as the most important after the experiment. In a different way, *Group 4* took what they earlier believed to be the least important attribute, *Attentiveness*, and now judged it as the most important. *Group 1* was the most consistent since it kept *Attentiveness* as the most important, and added *Timeliness* to their original choices. For *Group 1*, *Satisfaction* stayed as the least important attribute.

In summary, Figure 15 shows a very good level of consensus since all group lines closely follow the average line. There appears to have been no dissention in the ranks. When comparing both Figures 14 and 15, the most noteworthy change was the upward trend of *Group 3*.

Table 31 **Attributes - Post-Experiment Perceived Level of Importance**

	Group 1	Group 2	Group 3	Group 4
Most Important	Attentiveness	Interaction	Interaction	Attentiveness
Least Important	Satisfaction	Control Outcome Satisfaction	Control Timeliness	Motivation

Figure 16 depicts the pre and post-experiment average lines. While minor changes are seen for attributes *Control*, *Motivation*, *Satisfaction* and *Timeliness*, increased levels of importance are apparent for *Attentiveness*, *Interaction* and *Participation*. Only the attribute *Outcome* received a significant decrease in perceived level of importance for the success of meetings.

5.3.2 Attributes - Composite Standard Method

Presented in a similar fashion as discussed by Cooper and Emory (1995), Figure 17 - *Pre and Post-Experimental Results - Composite Standard Method* displays the importance of attributes when compared with each other. Both prior to and after the experiment, responses from paired comparisons were received. In both cases, the attribute *Timeliness* was perceived as the least important attribute for the success of meetings. Following this exercise, the *Composite Standard Method* served to identify the degree of difference between attributes. When comparing both results, three groupings of attributes are evident:

- *Timeliness* was perceived as the least important, followed by *Control*;
- *Outcome*, *Satisfaction* and *Attentiveness* were in the middle; and
- *Interaction*, *Participation* and *Motivation* were judged the most important.

More specifically and based on this method of analysis, *Interaction* was perceived as the most important since it had the best score when considering both the pre and post experiment surveys.

5.4 Task Facilitative Forms - Explanation-Building Method

As stated earlier, this sub-section presents a summary of participants' perceptions regarding attributes and Task Facilitative Forms. The perceived *level of Importance* and the perceived *level of Impact* (also identified as the level of difference) are presented by attribute and Task Facilitative Form. Then, a final consolidation of information helps in determining overall preferences which serve to answer the posed research question.

5.4.1 Perceived Level of Importance for the Success of Meetings

As shown in Figure 17 - *Pre and Post-Experimental Results - Composite Standard Method* and as previously-mentioned in sub-section 5.3 - *Pre and Post-Experimental Analysis and Reporting*, the two interval scales display a certain consistency in ranking of attributes. In line with common practices when using aggregation and averaging, as outlined by Zigurs (1992), Appendix N - *Preferred Task Facilitative Form* provides a combined interval scale where the row entitled *Weight* consolidates the findings. Overall, and as displayed in Appendix N, the changes in the ranking of attributes were minimal when combining the pre and post-experiment results.

5.4.2 Perceived Level of Difference between Task Facilitative Forms

As shown in Table 32, *Outcome* and *Satisfaction* were perceived as more important when the Facilitator/Chauffeur-Driven Form was used to support meetings. In other words, participants believed that greater attention during the conduct of meetings is necessary for ensuring that participants are satisfied with the proceedings, and that the quality of the *Outcome* is the best that can be achieved.

Table 32 **Attributes - Level of Difference Between Task Facilitative Forms**

	No Difference	Marginal Difference	Moderate Difference	Major Difference
	Equal to "0.00"	"0.10" or Greater - Less than "0.25"	"0.25" or Greater - Less than "0.75"	"0.75" or Greater
Attentiveness			FD over FCD	
Control			FD over FCD	
Interaction		FD over FCD		
Motivation		FD over FCD		
Outcome			FCD over FD	
Participation		FD over FCD		
Satisfaction			FCD over FD	
Timeliness			FD over FCD	

Participants also reported that the remaining six attributes (*Attentiveness*, *Control*, *Interaction*, *Motivation*, *Participation* and *Timeliness*) were more important when the Facilitator-Driven Form was used.

5.4.3 Attributes and Task Facilitative Forms - Preferences

When looking at Tables 33 and 34, the perceived level of positive impact and importance are respectively presented in descending order for the investigated attributes (where *1st* and *1ST* represents the highest level). In both Tables, the last column shows which Task Facilitative Form received better results for each attribute. In Table 33 - *Results by Perceived Level of Positive Impact*, *Participation* was seen as key for the success of the computer-supported meetings when using the Task Facilitative Forms. A ranking of *2nd* shows that this attribute was also perceived as very important, only slightly behind the attribute *Interaction*. *Motivation*, which ranked third in importance for the success of meetings, was placed last for the degree of positive impact.

Table 33 Results by Perceived Level of Positive Impact

Perceived Level of Positive Impact	ATTRIBUTE	Perceived Level of Importance	Preferred Task Facilitative Form
1st	Participation	2ND	FD
2nd	Attentiveness	4TH	FD
3rd	Satisfaction	5TH	FCD
4th	Interaction	1ST	FD
5th	Control	7TH	FD
6th	Timeliness	8TH	FD
7th	Outcome	6TH	FCD
8th	Motivation	3RD	FD

Only quality of *Outcome* and level of *Satisfaction* (identified as *Meeting-Dominant Attributes* - attributes which are dependent variables and where all parties of a meeting can impact) were seen as more effective when using the Facilitator/Chauffeur-Driven Form. The Facilitator-Driven Form produced better results for the remaining six attributes. Viewed from a different angle, Table 34 shows that *Interaction, Participation, Motivation* and *Attentiveness* (identified as *Participant-Dominant Attributes* - attributes where participants have a greater opportunity to impact) were considered the most important. The general comments made in response to open-ended questions coincide with these results. For example, participants mentioned that whatever the *Outcome*, if perceived needs were not met related to the four *Participant-Dominant Attributes*, after the meeting, a decrease in *Satisfaction* had a negative impact on *Outcome*.

Table 34 Results by Perceived Level of Importance

Perceived Level of Importance	ATTRIBUTE	Perceived Level of Positive Impact	Dominant Attribute Type	Preferred Task Facilitative Form
1ST	Interaction	4th	Participant	FD
2ND	Participation	1st	Participant	FD
3RD	Motivation	8th	Participant	FD
4TH	Attentiveness	2nd	Participant	FD
5TH	Satisfaction	3rd	Meeting	FCD
6TH	Outcome	7th	Meeting	FCD
7TH	Control	5th	Facilitation	FD
8TH	Timeliness	6th	Facilitation	FD

Finally, for the last two attributes, *Control* and *Timeliness*, which participants saw as least important, are more subject to the skills of the Facilitator, and are identified as *Facilitation-Dominant Attributes*. In essence, these are attributes that the facilitator, with possible interventions from the chauffeur if present, can manage and cause a greater impact. Notwithstanding, *Facilitation-Dominant Attributes* can be participant-driven if the facilitator allows this to occur. The reverse is also true for *Participant-Dominant Attributes*. Based on participants' comments, *Facilitation-Dominant Attributes* are still deemed important but the focus for positive impact on *Meeting-Dominant Attributes* comes from efficient and effective management of *Participant-Dominant Attributes*. Overall, *Dominant Attributes* can be seen as pre-meeting expectations of the contribution from a particular player or players, and where the level of dominance can change depending on what transpires during the meeting.

To answer the research question, a three-step approach was used in the production of one quantitative value for each of the Task Facilitative Forms. As mentioned in sub-section 5.4.1 - *Perceived Level of Importance for the Success of Meetings* and displayed in Appendix N, *Weights* were identified using the pre and post-experiment results. By attribute, using the *Aggregation and Averaging Method*, a global interval scale was developed to clarify the participants' perceived *level of importance* for the success of meetings.

Using post-meeting results as outlined in sub-section 5.2 - *Post-Meetings Analysis and Reporting*, the groups' averages by Task Facilitative Form for each attribute were combined with the previously identified weight for the attribute. From this, *Attribute Products* were identified for both Task Facilitative Forms. Using the attribute *Attentiveness* as example, the value of 4.96 (groups' averages for the Facilitator-Driven Form earlier reported in Table 21) was multiplied by the *Weight* (0.846) resulting in an *Attribute Product* of 4.20. This same *Weight* was used with the Facilitator/Chauffeur-Driven Form value of 4.50 for an *Attribute Product* of 3.81.

Finally, the sum of all *Attribute Products* by Task Facilitative Form provided quantitative values for final evaluation. Based on these findings, the Facilitator-Driven Form (value of 27.41) was preferred over the Facilitator/Chauffeur-Driven Form (value of 26.63), by a marginal difference of only 2.85%. As shown in the bottom row of Appendix N, the differences by attribute are less than ten percent (10%) suggesting that participants believed there was not an overwhelming difference favouring either an attribute or Task Facilitative Form. In summary, participants believed that all eight attributes played an important role for the success of meetings, and neither Task Facilitative Form was unanimously nor strongly preferred one over the other.

5.5 Conclusion - General Statement

The central goal of the study, to investigate whether a difference exists from the participants' point-of-view when the facilitator is accompanied by a chauffeur or performs both roles, has been achieved. Results of this study suggest a marginal preference between Task Facilitative Forms where the perception of importance and quality of attributes are also marginal.

6.0 BENEFITS AND LIMITATIONS

6.1 Benefits

This study's main research task was to report participants' views about the use of two Task Facilitative Forms to produce effective meetings. The provision of detailed reporting by attribute enhances the value of the research. The focus on specific attributes re-affirms the impact of each element in the conduct of meetings, and suggests a need for further research in this area. Since information gathered from questionnaires was analyzed, compared and reported by attribute, the results may also serve as a base for further research, and may suggest new research opportunities.

Since this study contains elements from different fields and areas of research, it could serve as a reference point and provide new perspectives. The use of a facilitator, chauffeur, participants, technology, groups, attributes, Task Facilitative Forms, meetings, and scenarios are areas in which this document could provide insight. In addition, the choice of *active factors* provided a unique combination to produce findings where the cumulative results could be used to better understand previous research.

For this study, participants preferred the Facilitator-Driven Form for the attributes *Attentiveness, Control, Interaction, Motivation, Participation* and *Timeliness*.

The development of improved user-friendly MSS systems could further enhance

the performance of the facilitator. Development of future MSS systems could also be considered in different ways where their usefulness is focused on attributes perceived by participants as more important and where improvement is both possible and necessary. In essence, identifying ways to improve support tools for facilitators and allowing them to concentrate on the effectiveness of meetings are crucial for the betterment of decision-making.

From another perspective, since some attributes were identified as providing better results when using the Facilitator/Chauffeur-Driven Form, the same observation holds true when aiming for continuous improvement. This paper suggests new possibilities for the use of this Task Facilitative Form. For the business community, increased effectiveness of meetings is crucial since many decisions are made in groups. Outlining the similarities and differences among attributes as perceived by participants is important for organizations who wish to improve and are considering the use of computer-supported technology for meetings. For businesses who already have this type of support tool in place, a better understanding of the human variable in meetings, can only help to prevent problems.

For researchers, the results of this study could serve as a guide for articulating new research questions or acting as a point of comparison. For example, how crucial are the perceptions of participants and to what extent do they impact

meetings? While results of this study suggest a marginal preference between Task Facilitative Forms where the perception of importance and quality of attributes are also marginal, yet this research provides another reference point to justify further research.

6.2 Limitations

6.2.1 Generalization

Since this experiment used a case study methodology, concerns about generalization remain legitimate. While application of this method allowed for simplicity and fairly accurate results, it fell short in terms of its ability to generalize from results and make comparisons with other cases or scenarios. With only one support system (MeetingWorks) and only two scenarios, possibility of generalization remains limited from this standpoint. However, as outlined by Yin (1989), generalization to theory can still be legitimately reported when using case study research.

6.2.2 Validity

To enhance both internal and external validity, the following considerations were incorporated into this research:

- Freedom from bias was a primary goal;
- Participants were randomly assigned to groups;
- Certain equivalence of groups was achieved by matching members of groups with key factors, namely:
 - Carleton University undergraduate students from School of Business; and
 - Three participants per meeting.

6.2.3 Reliability

To ensure reliability where the same results could be produced under the same conditions, case study protocol or norms for proper conduct of meetings were prepared and incorporated. The variation of attributes not being evaluated from internal and external sources was minimized and controlled. In addition, a chain of events (e.g. steps included as part of the meeting agenda) was maintained to increase reliability of the information. The insignificance of the replication mean squares in the statistical analysis provides evidence to support the above statements.

6.2.4 Practicality

To ensure practicality in this research, economy, convenience and interpretability were controlled. For economy, use of the MeetingWorks software provided substantial savings due to its availability to participants, while allowing the

researcher to analyze data and write the report. Convenience for all parties involved in this research was achieved since ease of access to the technological infrastructure allowed for faster and more accurate reporting. To ensure adequate interpretability, participants were asked to behave as they would in any other meeting. In addition, to ensure that participants could fully express themselves about the attributes being investigated, questionnaires used to gather information contained both open and closed questions.

6.2.5 Statistical Significance

Computation for Bonferroni Inequality could not be performed since the number of statistical tests must be known ahead of time. An example of this is the statistical significance of the interaction *BC - Scenarios* and *Meeting Sequence* for the attribute *Outcome* which resulted in inability to perform statistical tests for factors *B - Scenarios* and *C - Meeting Sequence* main effects. Since multiple tests were done, it can be expected that the actual level of Type I error for the experiment as a whole will be higher than the nominal level of *0.01* used in the individual significance tests.

6.3 Potential Future Research

This research touched on several subjects, namely, some elements of technology, structure of meetings, group decision-making, and facilitation. The use of technology to support meetings helps by solving problems which exist in non-computer-supported meetings. However, the introduction of technology brings new demands such as using a chauffeur or using a facilitator who performs both functions. Further research is required in this area because, whenever human beings are introduced to the equation, even the same group with the same environment may produce different results. Notwithstanding this variable, trends should be analyzed to better predict ways of becoming more thoughtful in the preparation of meeting agendas and rules of order.

Altogether, eight (8) meetings were conducted using four groups of three undergraduate students each, and where the factorial design was used. In fact, the use of a *two-by-two-by-two* factorial design (e.g. Task Facilitative Forms, scenarios, and sequence of meetings) provided the driving structure for this research. As outlined earlier, factors such as *Gender* and *Age Categorization* were not evaluated as part of the research. Considering such factors could be an area for future research. For example, case study research such as the one presented in this study could include *Gender* as an evaluated factor, thereby researching the impact of gender when conducting computer-supported meetings.

This study concentrated only on the two forms of the Task Facilitative Support Mode (see sub-section 2.6 - *Facilitator and Chauffeur*). Further research in this area is warranted using other technology support modes, where a comparison of findings with this study could serve as a catalyst for more research. Based on this study's results, research could also be pursued for improved support of meetings in relation to *Participant-Dominant* and *Facilitation-Dominant Attributes* for the Facilitator/Chauffeur-Driven Form, and *Meeting-Dominant Attributes* for the Facilitator-Driven Form.

The potential for future research where this study can be a reference point are numerous when considering that, based on McGrath's *Typology of Groups* (see sub-section 2.1 - *Group Decision-Making*), different groups could produce different results and be prone to different behaviours and perceptions. For example, using computer-supported meetings for McGrath's type 14 - *Highly Stylized Constrained Task and Communication* could be interesting. This would introduce an element of *Different Place* and *Different Time* as stated in DeSanctis and Gallupe's (1985) Model (see sub-section 2.5 - *Meeting Support Systems*).

In summary, the number of variations for case study research in such areas as meeting support systems, group decision-making, role of the facilitator and chauffeur, and role of the participants are only a few of the possible options where a combination of such elements can make for informative and productive studies.

FIGURES

Typology of Groups

Figure 1

Composed Groups			Natural (Extent) Groups		Broad Band of Activities	Limited Band of Activities	Simulations	Imposed Tasks	
Restricted Interaction		Unrestricted Interaction	Limited Term	Very Long Term					
Restricted Channels	Restricted Process	Face to Face Ad hoc						Free Performance Forms	Artificial Tasks
		Natural Groups	2 Expeditions	1 Embedding systems					
		5 System tests (not using an existing crew)	4 Task forces	3 Standing crews					
Quasi Groups	Concocted Groups	7 Mock studies	6 Crew practice/training studies						
11 Structured communication channels studies	10 Restricted communication process studies	9 Ad hoc laboratory groups	8 Crew tests						
14 Highly stylized constrained task & communication	13 Structured task & restricted communication process studies	12 Structured task studies							

1. Families	2. Space Crews
3. Sports Teams	4. Study Commissions
5. Adhoc Groups on systems endogenous tasks	6. Practice Games
7. Mock Juries	8. Practice Drills
9. Face-to-Face ad hoc groups	10. Brainstorming
11. Restricted Modality Comparisons	12. Concept Attainment Tasks
13. Brainstorming, NGT	14. Delphi

Source: M^cGrath (1984)

Facilitation Framework

Figure 2

Source: Bostrom, Anson and Clawson (1993)

Goal/Outcome-Directed Model

Figure 3

Source: Bostrom, Anson and Clawson (1993)

EDASA Process Model

Figure 4

Source: Whiteley and Garcia (1996)

Research Process Model

Figure 5

Group No. P(group,id)	PART 1				PART 2			
	Group 1	Group 2	Group 3	Group 4	Group 1	Group 2	Group 3	Group 4
Group 1 (P11,P12,P13)	Q1 SA-FD Q2				SB-FCD Q2 Q3			
Group 2 (P21,P22,P23)		Q1 SB-FCD Q2				SA-FD Q2 Q3		
Group 3 (P31,P32,P33)			Q1 SB-FD Q2				SA-FCD Q2 Q3	
Group 4 (P41,P42,P43)				Q1 SA-FCD Q2				SB-FD Q2 Q3

P(group,id) - Participant Confidential Code: "group" represents the group number and "id" represents the personal identifier within the group.

Q1 - Questionnaire 1 - Completed by participants prior to their first meeting;

Q2 - Questionnaire 2 - Completed by participants after their first and second meetings;

Q3 - Questionnaire 3 - Completed by participants after their second meeting and having completed Q2 for a second time.

SA - Scenario A and SB - Scenario B - Participants were presented one scenario in the first meeting, the other scenario in the second meeting

FD - Facilitator-Driven Form: Facilitator directed participants on what, when and how to use the systems features (no chauffeur);

FCD - Facilitator/Chauffeur-Driven Form: Facilitator drove the process and instructed the chauffeur who operated the technology.

Attentiveness - Post-Meetings Results

Figure 6

Control - Post-Meetings Results

Figure 7

Interaction - Post-Meetings Results

Figure 8

Motivation - Post-Meetings Results

Figure 9

Outcome - Post-Meetings Results

Figure 10

Participation - Post-Meeting Results

Figure 11

Satisfaction - Post-Meetings Results

Figure 12

Timeliness - Post-Meetings Results

Figure 13

Pre-Experimental Attributes Analysis - Pattern-Matching Method

Figure 14

Post-Experimental Attributes Analysis - Pattern-Matching Method

Figure 15

Pre and Post-Experimental Comparison

Figure 16

Pre and Post-Experimental Results - Composite Standard Method

Figure 17

Legend:

I = Interaction
P = Participation

A = Attentiveness
M = Motivation
S = Satisfaction

C = Control
O = Outcome
T = Timeliness

Task Facilitation Forms - Aggregation and Averaging Method

Figure 18

A P P E N D I C E S

Starting a Business Partnership - Scenario A

Appendix A

During your fourth year of a "*Business Program*", you decided to participate in a "*National Business Students Contest*" for assessing the potential and viability of business partnership. Two other students were assigned to your group; you spent hours together on this project. Your group won the contest and a total amount of \$25,000 is now at your disposal. After discussion with your two new friends, you all agreed to undertake this business partnership venture.

You contacted the Small Businesses Startup Program (SBSP) which is a governmental department who assist people in starting small businesses. When you expressed your intention, you were informed that Ms. Granger would be the SBSP officer who would assist you. Later that day, you all met Ms. Granger. When you presented your ideas, she outlined that a business plan is needed to ensure a sound business startup. She further outlined the importance of establishing a process for decision-making among partners. Ms. Granger also stated that entrepreneurs entering into a partnership must deal with certain key matters. For instance, she stated simple questions - what type of business did you have in mind? and what are your short term goals? In response to the blank faces, she suggested that additional thinking and a detailed business plan is needed where such questions are discussed and agreed.

Since the startup of a business partnership is in mind, Ms. Granger decided to offer additional assistance. She outlined that her organization presently have in place a pilot project to see how technology can help in the establishment of sound business partnership. She further mentioned that a facilitator, with the supporting technology, would be made available to assist in deciding, for example, what type of business should be established. After a short deliberation, you agreed to take advantage of this offer. Based on that response, Ms. Granger did set up the first meeting for 10AM tomorrow.

It is now 10AM the following day, and you are ready to attend this meeting. Steps from the MeetingWorks Software that will be displayed on the public screen:

STEPS

ACTIVITIES / PURPOSE

Generate	- Outline Individual Ideas of Types of Business to Consider
Organize	- Organize Previous Ideas in Logical Manner
Evaluate	- Express Personal Interest for each Idea and Reduce the list based on the Group's Decision
Generate	- Outline what you Believe are Critical Factors for a Business to Succeed
Organize	- Organize the Critical Success Factors in a Logical Manner
Cross-Impact	- Rate the Importance of Critical Success Factors on each Type of Business being Considered
Multiple-Criteria Analysis	- Assign Weights to each Critical Success Factor and Type of Business, for Deciding on the Type of Business to Start
Evaluate	- Express personal Interest for Each Business Type (Optional)

The group believes it is a good agenda for group decision-making and is ready to start.

Fund Raising Event - Scenario B

Appendix B

A few weeks ago, the University Students Association Executive Committee (USAEC) have analyzed their financial forecast for the upcoming year. Although they just received an amount of \$5,000.00 from Estate Food Company, they have determined that additional revenues in the order of \$20,000.00 are needed in the next two months. The President of the Association decided to set up an ad hoc committee comprised of three volunteer students and one member of the executive committee as Chairperson.

When they first met, the committee agreed that they needed to discuss what type of event or events would generate such a substantial amount of money. However, since then, the last three meetings have been disastrous. No agreement seems possible and the Chairperson believes that the group is in an impasse. Furthermore, due to the exchange of some words and rising emotions, members started to disagree on everything. Now, to make matters worst, the volunteer students have just opted out.

Based on those events, the President decided to investigate the possibility of computer-assisted technology for group decision-making. Following a few calls, he was able to receive confirmation, and where a facilitator would be leading the process.

As volunteer, you have been asked to attend a meeting for the identification and recommendation of an event or events to generate the required sum.

Steps from the MeetingWorks Software that will be displayed on the public screen:

STEPS	ACTIVITIES / PURPOSE
Generate	- Outline Individual Ideas of Events to Consider
Organize	- Organize Previous Ideas in Logical Manner
Evaluate	- Express Personal Interest for each Event and Reduce the list based on the Group's Decision
Generate	- Outline what you believe are Critical Factors for an Event to Succeed
Organize	- Organize the Critical Success Factors in a Logical Manner
Cross-Impact	- Rate the Importance of Critical Success Factors on each Event being Considered
Multiple-Criteria Analysis	- Assign Weights to each Critical Success Factor and Event, for Deciding on the Event or Events to Recommend
Evaluate	- Express personal Interest for Each Event (Optional)

The group believes it is a good agenda for group decision-making and is ready to start.

Information Sheet and Consent Form - Facilitator

Appendix C

INFORMATION SHEET AND CONSENT FORM

Facilitator Information:

The purpose of this research is to further our understanding of how computer support should be used in consort with people managing the meetings. As part of a research project undertaken in partial fulfilment of a master's thesis, you are being asked to participate as facilitator in eight computer-supported meetings.

Eight sessions of approximately 2 hours each will be dedicated where for the first half hour, participants will complete a pre-test questionnaire, and explanations about the experiment and the scenario will be provided. A period of 30 to 45 minutes is allocated for the conduct of the meeting, where you are asked to perform the role of facilitator. For four of the eight meetings, a chauffeur (person operating the computer under your direction only) will be at your disposal. For the other four meetings, you will perform both the roles of facilitator and chauffeur. Finally, following the conduct of each meeting, approximately half an hour is required for the completion of post-test questionnaires by participants, and a debriefing session to answer questions. For each meeting, one of two selected scenarios will be utilized. Prior to the experiment, you will receive the appropriate training to ensure professional use of the technology, being the MeetingWorks software.

All the answers from questionnaires will be kept in the strictest confidence. To ensure the information is kept confidential, participants will be given a "*Participant Confidential Code*", and all references will be made using this code. Participants are free to leave at any time, and can also leave unanswered any questions they find objectionable. However, for this research, the importance that questionnaires are answered as completely as possible is outlined.

Results of this study will be made available to you. If you are willing to participate as facilitator, please complete the "*Consent Form*" portion.

CONSENT FORM

I have read and understood the facilitator information sheet and I agree to participate as facilitator in this case study experiment.

NAME: _____
 SIGNATURE: _____
 DATE: _____

Information Sheet and Consent Form - Participants

Appendix D

INFORMATION SHEET AND CONSENT FORM

Participant Information:

The purpose of this research is to further our understanding of how computer support should be used in consort with people managing the meetings. As part of a research project undertaken in partial fulfilment of a master's thesis, you are being asked to participate in two computer-supported meetings.

The sessions will be approximately a 2 hours exercise where the first half hour will be dedicated to the completion of a pre-test questionnaire and to explaining the scenario being used in the meeting. A period of 30 to 45 minutes have been allocated for the conduct of the meeting, where you are asked to be yourself since there is no role playing. Finally, approximately half an hour of your time will be required for the completion of a post-test questionnaire (two after the second meeting), and a debriefing session to answer questions in regards to your participation in this experiment.

All your answers given will be kept in the strictest confidence. To ensure the needed link between the pre and post-test questionnaires, and that information is kept confidential, you will be given a "*Participant Confidential Code*", and all references will be made using this code. You are free to leave at any time, and you can leave unanswered any questions you find objectionable. However, for this research, it is important that questionnaires are answered as completely as possible.

Upon request, results of this study will be made available to you.

If you are willing to participate, please complete the "*Consent Form*" portion .

 CONSENT FORM

I have read and understood the participant information sheet and I agree to participate in the experiment.

NAME (Please Print): _____

SIGNATURE: _____

DATE: _____

PARTICIPANT CONFIDENTIAL CODE: _____ (To be assigned later)

Questionnaire 1 - Pre-Experimental

Appendix E

QUESTIONNAIRE 1 - GIVEN TO PARTICIPANTS PRIOR TO THE MEETING

Page 1 of 3

Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43

Please enter an "X" where appropriate:

Gender: Male: _____ Female: _____ Age Group: 18 - 20: _____
 21 - 25: _____
 26 - 30: _____
 31 - 35: _____
 36 - 40: _____
 41 +: _____

Years working with computers?: At home: _____ years

At work: _____ years

Student: _____ years

Degree sought: _____

Previous degrees: _____

Number of computer-related courses taken: At University: _____

Others: _____

Note: This information will be kept confidential and will be used for the sole
 purpose of the study.

QUESTIONNAIRE 1 - GIVEN TO PARTICIPANTS PRIOR TO THE MEETING

Page 2 of 3

Question 1: What are the Importance of these attributes for the success of a meeting?

Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43

<u>Attribute</u>	<u>Appropriate Definition</u>	<u>+1 Very Unimportant—Very Important +6</u>
Attentiveness	- A condition of readiness, being observant	1 2 3 4 5 6
Control	- Power or authority to guide or manage	1 2 3 4 5 6
Interaction	- Mutual or reciprocal action or influence	1 2 3 4 5 6
Motivation	- Stimulus, to influence	1 2 3 4 5 6
Outcome	- Quality of something that follows as a result	1 2 3 4 5 6
Participation	- To have a part or share in something	1 2 3 4 5 6
Satisfaction	- Contentment, source or means of enjoyment	1 2 3 4 5 6
Timeliness	- At a pre-determined time and duration	1 2 3 4 5 6

QUESTIONNAIRE 1 - GIVEN TO PARTICIPANTS PRIOR TO THE MEETING

Page 3 of 3

Question 2: When comparing two attributes, which one do you believe is the most important for the success of a meeting?

Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43

	<u>YES</u>	<u>NO</u>
2.1 Participation is more important than Motivation	Yes	No
2.2 Timeliness is more important than Interaction	Yes	No
2.3 Outcome is more important than Participation	Yes	No
2.4 Attentiveness is more important than Satisfaction	Yes	No
2.5 Motivation is more important than Timeliness	Yes	No
2.6 Interaction is more important than Control	Yes	No
2.7 Participation is more important than Attentiveness	Yes	No
2.8 Satisfaction is more important than Motivation	Yes	No
2.9 Control is more important than Outcome	Yes	No
2.10 Timeliness is more important than Attentiveness	Yes	No
2.11 Interaction is more important than Participation	Yes	No
2.12 Satisfaction is more important than Timeliness	Yes	No
2.13 Attentiveness is more important than Interaction	Yes	No
2.14 Participation is more important than Control	Yes	No
2.15 Outcome is more important than Timeliness	Yes	No
2.16 Interaction is more important than Outcome	Yes	No
2.17 Control is more important than Satisfaction	Yes	No
2.18 Outcome is more important than Motivation	Yes	No
2.19 Timeliness is more important than Participation	Yes	No
2.20 Attentiveness is more important than Control	Yes	No
2.21 Satisfaction is more important than Outcome	Yes	No
2.22 Control is more important than Timeliness	Yes	No
2.23 Motivation is more important than Attentiveness	Yes	No
2.24 Participation is more important than Satisfaction	Yes	No
2.25 Interaction is more important than Motivation	Yes	No
2.26 Attentiveness is more important than Outcome	Yes	No
2.27 Satisfaction is more important than Interaction	Yes	No
2.28 Control is more important than Motivation	Yes	No

Questionnaire 2 - Post-Meeting

Appendix F

QUESTIONNAIRE 2 - GIVEN TO PARTICIPANTS AFTER THE MEETING

Scenario: _____ Task Facilitative Form: _____

Page 1 of 4

Question: Do you believe that ...

+ 1 Strongly Disagree — Strongly Agree +6

Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43

1 the Facilitator ensured continuous participation?	1 2 3 4 5 6
2 you would like to attend more of these types of meetings?	1 2 3 4 5 6
3 everyone was focussed at solving the problem?	1 2 3 4 5 6
4 the Facilitator did not help in solving the problem?	1 2 3 4 5 6
5 the use of technology increased satisfaction?	1 2 3 4 5 6
6 the interaction between participants was productive?	1 2 3 4 5 6
7 time was well managed?	1 2 3 4 5 6
8 everyone did not get the chance to contribute?	1 2 3 4 5 6
9 it was easy to stay focussed on solving the problem?	1 2 3 4 5 6
10 technology helped us in solving the problem?	1 2 3 4 5 6
11 everyone seemed to like the experience?	1 2 3 4 5 6
12 this meeting was kept under control at all time?	1 2 3 4 5 6
13 technology helped in keeping the meeting on time?	1 2 3 4 5 6
14 the Facilitator kept everyone motivated?	1 2 3 4 5 6
15 you had the chance to fully contribute?	1 2 3 4 5 6
16 the productive debate between participants was good?	1 2 3 4 5 6

QUESTIONNAIRE 2 - GIVEN TO PARTICIPANTS AFTER THE MEETING

Page 2 of 4

Question: Do you believe that ...

+ 1 Strongly Disagree — Strongly Agree +6

Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43

17 the use of technology increased attentiveness?	1 2 3 4 5 6
18 few participants considered the problem solved?	1 2 3 4 5 6
19 it was not beneficial to hold a meeting in this format?	1 2 3 4 5 6
20 all adhered to the structured format of the meeting?	1 2 3 4 5 6
21 the use of technology increased interaction?	1 2 3 4 5 6
22 it was worth the time?	1 2 3 4 5 6
23 we all would want to attend more meetings of this type?	1 2 3 4 5 6
24 the Facilitator did not keep everyone focussed?	1 2 3 4 5 6
25 the use of technology increased participation?	1 2 3 4 5 6
26 the meeting was always kept under control?	1 2 3 4 5 6
27 we all felt it was worth the time to solve this problem?	1 2 3 4 5 6
28 the interaction was well managed by the Facilitator?	1 2 3 4 5 6
29 the use of technology increased motivation?	1 2 3 4 5 6
30 the final outcome is the right decision?	1 2 3 4 5 6
31 you were satisfied with how the meeting was conducted?	1 2 3 4 5 6
32 with technology, meetings are harder to control?	1 2 3 4 5 6

QUESTIONNAIRE 2 - GIVEN TO PARTICIPANTS AFTER THE MEETING

Page 3 of 4

Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43

For the meeting you just attended, please comment on the following:

Do you believe that the process utilized was appropriate? Please elaborate.

Do you believe that using technology and a facilitator improves the quality of the decision taken?

Do you believe that the problem given to the group was appropriate? Please elaborate.

Do you believe enough time was given for each activity being performed? Please elaborate.

QUESTIONNAIRE 2 - GIVEN TO PARTICIPANTS AFTER THE MEETING
Page 4 of 4
Your Comments about the following subjects would be appreciated

How was the interaction between participants? Please elaborate.

For the problem dealt with in the meeting, do you believe that the best possible solution was found and chosen? Please elaborate.

Was the meeting adequately managed? Please elaborate.

What is the thing you **liked** the most about this meeting? Why?

What is the thing you **disliked** the most about this meeting? Why?

Note: This information will be used for the sole purpose of the study. THANK YOU

Questionnaire 3 - Post-Experimental

Appendix G

QUESTIONNAIRE 3 - TO PARTICIPANTS AFTER THEIR TWO MEETINGS

Page 1 of 4

Question 1: What are the Importance of these attributes for the success of a meeting?

Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43

<u>Attribute</u>	<u>Appropriate Definition</u>	<u>+1-Very Unimportant-Very Important +6</u>
Attentiveness	- A condition of readiness, being observant	1 2 3 4 5 6
Control	- Power or authority to guide or manage	1 2 3 4 5 6
Interaction	- Mutual or reciprocal action or influence	1 2 3 4 5 6
Motivation	- Stimulus, to influence	1 2 3 4 5 6
Outcome	- Quality of something that follows as a result	1 2 3 4 5 6
Participation	- To have a part or share in something	1 2 3 4 5 6
Satisfaction	- Contentment, source or means of enjoyment	1 2 3 4 5 6
Timeliness	- At a pre-determined time and duration	1 2 3 4 5 6

QUESTIONNAIRE 3 - TO PARTICIPANTS AFTER THEIR TWO MEETINGS

Page 2 of 4

Question 2: When comparing two attributes, which one do you believe is the most important for the success of a meeting?

Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43

	YES	NO
2.1 Participation is more important than Motivation	Yes	No
2.2 Timeliness is more important than Interaction	Yes	No
2.3 Outcome is more important than Participation	Yes	No
2.4 Attentiveness is more important than Satisfaction	Yes	No
2.5 Motivation is more important than Timeliness	Yes	No
2.6 Interaction is more important than Control	Yes	No
2.7 Participation is more important than Attentiveness	Yes	No
2.8 Satisfaction is more important than Motivation	Yes	No
2.9 Control is more important than Outcome	Yes	No
2.10 Timeliness is more important than Attentiveness	Yes	No
2.11 Interaction is more important than Participation	Yes	No
2.12 Satisfaction is more important than Timeliness	Yes	No
2.13 Attentiveness is more important than Interaction	Yes	No
2.14 Participation is more important than Control	Yes	No
2.15 Outcome is more important than Timeliness	Yes	No
2.16 Interaction is more important than Outcome	Yes	No
2.17 Control is more important than Satisfaction	Yes	No
2.18 Outcome is more important than Motivation	Yes	No
2.19 Timeliness is more important than Participation	Yes	No
2.20 Attentiveness is more important than Control	Yes	No
2.21 Satisfaction is more important than Outcome	Yes	No
2.22 Control is more important than Timeliness	Yes	No
2.23 Motivation is more important than Attentiveness	Yes	No
2.24 Participation is more important than Satisfaction	Yes	No
2.25 Interaction is more important than Motivation	Yes	No
2.26 Attentiveness is more important than Outcome	Yes	No
2.27 Satisfaction is more important than Interaction	Yes	No
2.28 Control is more important than Motivation	Yes	No

QUESTIONNAIRE 3 - TO PARTICIPANTS AFTER THEIR TWO MEETINGS**Page 3 of 4****Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43**

If you were responsible for the setup and management of a computer-supported meeting, what would you do different if anything? Please elaborate.

Do you believe that technology helped in both meetings? Please elaborate.

Which problem did you find the most challenging? Please elaborate.

Based on what you have seen do you believe two persons (a facilitator and a chauffeur) are necessary when using technology to support a meeting? Why?

QUESTIONNAIRE 3 - TO PARTICIPANTS AFTER THEIR TWO MEETINGS**Page 4 of 4****Participant Confidential Code: P11,P12,P13,P21,P22,P23,P31,P32,P33,P41,P42,P43**

Could one of the two, or both meetings, been better managed? Please elaborate.

If there is anything you wish to comment about this study, this section is meant for this purpose. You may use the back of this page if you require additional space.

Note: This information will be used for the sole purpose of the study.**THANK YOU**

Selection of Participants**Appendix H**

At the beginning of the first session, the course professor provided a brief description of the course and its corresponding workload which included volunteers to participate in this study. Students were informed that four groups of three participants each, would be required to take part in two meetings where they would be introduced to the two forms of the Task Facilitative Support Mode using two scenarios. Following an explanation of the scenarios, the *Task Facilitative Support Mode*, and the experimental process, a clear statement about personal confidentiality was made. With exactly twelve people out of twenty choosing to participate in this study, the procedure for finding more volunteers (Professor to prompt for more volunteers) or reducing the list (Professor to decide which student would not participate) was not required. At the end of the class, all volunteers gathered for the selection of participants in one of the four groups.

Prior to the selection of participants for each group, students were all given an *Information Sheet/Consent Form* for signature of consent. To ensure unbiased random selection for determining the groups, participants were informed that twelve pieces of paper were in a box, and where they were identified as *P11, P12, P13, P21, P22, P23, P31, P32, P33, P41, P42, and P43*. They were also told that the first number was the group number, the second number was the participant identifier, and together, this would be their *Participant Confidential Code*. Following the selection, they were individually provided with the coordinates for their two meetings.

Post-Meetings Results - Group Totals - Aggregation and Averaging Appendix I

ATTRIBUTE	? No.	Facilitator-Driven Form						Facilitator/Chauffeur-Driven Form					
		G1	G2	G3	G4	Total	Avg	G1	G2	G3	G4	Total	Avg
Attentiveness	3	13	17	15	13	58	14.5	10	13	14	11	48	12.0
	9	13	15	12	15	55	13.8	13	15	13	11	52	13.0
	17	17	17	14	14	62	15.5	16	17	12	14	59	14.8
	24	14	17	16	16	63	15.8	11	15	17	14	57	14.3
	Total	57	66	57	58	238	59.5	50	60	56	50	216	54.0
	Average	4.75	5.50	4.75	4.83	19.8	4.96	4.17	5.00	4.67	4.17	18.0	4.50
Control	12	12	15	16	13	56	14.0	16	12	16	9	53	13.3
	20	14	16	14	15	59	14.8	15	10	16	14	55	13.8
	26	14	14	16	15	59	14.8	14	11	15	8	48	12.0
	32	16	11	13	13	53	13.3	15	13	16	10	54	13.5
	Total	56	56	59	56	227	56.8	60	46	63	41	210	52.5
	Average	4.67	4.67	4.92	4.67	18.9	4.73	5.00	3.83	5.25	3.42	17.5	4.38
Interaction	6	16	16	15	15	62	15.5	13	15	13	14	55	13.8
	16	13	11	16	14	54	13.5	10	17	14	15	56	14.0
	21	13	13	12	12	50	12.5	13	14	11	14	52	13.0
	28	14	15	16	14	59	14.8	12	14	13	12	51	12.8
	Total	56	55	59	55	225	56.3	48	60	51	55	214	53.5
	Average	4.67	4.58	4.92	4.58	18.8	4.69	4.00	5.00	4.25	4.58	17.8	4.46
Motivation	2	15	14	12	12	53	13.3	14	10	13	14	51	12.8
	14	11	13	12	13	49	12.3	13	14	13	10	50	12.5
	23	14	14	13	12	53	13.3	16	11	13	8	48	12.0
	29	15	12	11	13	51	12.8	14	15	10	12	51	12.8
	Total	55	53	48	50	206	51.5	57	50	49	44	200	50.0
	Average	4.58	4.42	4.00	4.17	17.2	4.29	4.75	4.17	4.08	3.67	16.7	4.17
Outcome	4	9	10	13	16	48	12.0	16	11	15	16	58	14.5
	10	12	17	15	14	58	14.5	14	18	15	12	59	14.8
	18	7	11	17	10	45	11.3	8	13	16	10	47	11.8
	30	7	15	12	9	43	10.8	12	16	11	10	49	12.3
	Total	35	53	57	49	194	48.5	50	58	57	48	213	53.3
	Average	2.92	4.42	4.75	4.08	16.2	4.04	4.17	4.83	4.75	4.00	17.8	4.44
Participation	1	12	16	17	14	59	14.8	12	15	14	12	53	13.3
	8	15	13	18	14	60	15.0	12	17	12	17	58	14.5
	15	12	17	14	16	59	14.8	14	16	17	16	63	15.8
	25	16	17	15	14	62	15.5	14	17	13	13	57	14.3
	Total	55	63	64	58	240	60.0	52	65	56	58	231	57.8
	Average	4.58	5.25	5.33	4.83	20.0	5.00	4.33	5.42	4.67	4.83	19.3	4.81
Satisfaction	5	13	16	11	11	51	12.8	14	15	15	10	54	13.5
	11	13	15	13	15	56	14.0	14	13	14	14	55	13.8
	19	16	16	14	9	55	13.8	17	16	15	14	62	15.5
	31	13	15	16	14	58	14.5	14	18	14	10	56	14.0
	Total	55	62	54	49	220	55.0	59	62	58	48	227	56.8
	Average	4.58	5.17	4.50	4.08	18.3	4.58	4.92	5.17	4.83	4.00	18.9	4.73
Timeliness	7	12	15	15	15	57	14.3	12	8	16	7	43	10.8
	13	13	13	12	14	52	13.0	13	12	16	7	48	12.0
	22	16	15	14	14	59	14.8	17	14	14	12	57	14.3
	27	14	14	15	13	56	14.0	13	12	14	11	50	12.5
	Total	55	57	56	56	224	56.0	55	46	60	37	198	49.5
	Average	4.58	4.75	4.67	4.67	18.7	4.67	4.58	3.83	5.00	3.08	16.5	4.13

Pre-Experimental Results - Composite Standard Method

Appendix J

	Attentiveness	Control	Interaction	Motivation	Outcome	Participation	Satisfaction	Timeliness
Attentiveness	-	2	9	7	7	10	4	3
Control	10	-	10	9	6	9	9	3
Interaction	3	2	-	5	5	11	3	0
Motivation	5	3	7	-	5	7	6	2
Outcome	5	6	7	7	-	7	8	2
Participation	2	3	1	5	5	-	4	2
Satisfaction	8	3	9	6	4	8	-	3
Timeliness	9	9	12	10	10	10	9	-
TOTAL	42	28	55	49	42	62	43	15

COMPOSITE STANDARD METHOD:

Rank Order	5	7	2	3	5	1	4	8
Mp	0.500	0.354	0.635	0.573	0.500	0.708	0.510	0.219
For Zj:								
Mp - .5	0.000	-0.146	0.135	0.073	0.000	0.208	0.010	-0.281
Zj (Taken from Normal Curve Table)	0.000	-0.374	0.350	0.183	0.000	0.550	0.025	-0.776
For Rj:								
Find Min Zj	-0.776	-0.776	-0.776	-0.776	-0.776	-0.776	-0.776	-0.776
Have Positiv Min Zj	0.776	0.776	0.776	0.776	0.776	0.776	0.776	0.776
Rj (All Positive)	0.776	0.402	1.126	0.959	0.776	1.326	0.801	0.000

Post-Experimental Results - Composite Standard Method

Appendix K

	Attentiveness	Control	Interaction	Motivation	Outcome	Participation	Satisfaction	Timeliness
Attentiveness	-	3	7	7	5	6	4	2
Control	9	-	11	9	8	8	6	5
Interaction	5	1	-	4	3	3	2	0
Motivation	5	3	8	-	3	7	5	0
Outcome	7	4	9	9	-	9	7	5
Participation	6	4	9	5	3	-	4	2
Satisfaction	8	6	10	7	5	8	-	3
Timeliness	10	7	12	12	7	10	9	-
TOTAL	50	28	66	53	34	51	37	17

COMPOSITE STANDARD METHOD:

Rank Order	4	7	1	2	6	3	5	8
Mp	0.583	0.354	0.750	0.615	0.417	0.594	0.448	0.240

For Zj:

Mp - .5	0.083	-0.146	0.250	0.115	-0.083	0.094	-0.052	-0.260
Zj (Taken from Normal Curve Table)	0.210	-0.374	0.675	0.292	-0.210	0.238	-0.130	-0.706

For Rj:

Find Min Zj	-0.706	-0.706	-0.706	-0.706	-0.706	-0.706	-0.706	-0.706
Have Positiv Min Zj	0.706	0.706	0.706	0.706	0.706	0.706	0.706	0.706
Rj (All Positive)	0.916	0.332	1.381	0.998	0.496	0.944	0.576	0.000

Incidents During the Conduct of Meetings**Appendix L****Incident 1:**

During the first meeting of *Group 2* using *Scenario B* and the *Facilitator/Chauffeur-Driven Form*, a problem occurred during the brainstorming exercise when identifying critical success factors (see Appendix B). From one of the participant's computer, the character which was just entered disappeared from the screen but reappeared when the next character was entered. The participant acknowledged that this did not bother him, and that the task could continue. The step worked properly and all ideas were incorporated with those from other participants.

Incident 2:

A software problem occurred during the optional last step of the second meeting when *Group 4* was using *Scenario B* and the *Facilitator-Driven Form*. This problem was related to insufficient memory which caused one of the participant's terminal to abnormally terminate. Within a span of about one minute, the Facilitator realized that the problem could not be fixed easily and decided to terminate the use of the participants' computers for the remainder of the session. To complete this exercise on a positive note, the Facilitator did a short summary presentation, and emphasized the decisions previously made by the group to solve the problem.

Participants' Perception of the Experiment

Appendix M

1 - Do you believe that the process was appropriate?

Responses: Nineteen (19) *Yes*, four (4) *I do believe or think so*;

Others: *I think that there should have been another question at the beginning asking us what type of business we would like to be in.*

Yes, the process was good, software used is considered more productive, the brainstorming session on the computer developed good solutions.

2 - Does Technology and a Facilitator improve the quality of the decision?

Responses: Fourteen (14) *Yes*, three (3) *It can*, three (3) *I don't know*

Others: *I believe a tendency might be found to do so.*

I don't think that it improves the quality of the decision, but it does allow the process on reaching a final decision more easier. It facilitates the interaction among members of a group.

I think in this case it enabled to come to a unanimous decision. I'm not positive about quality, however.

3 - Was the scenario given to the group appropriate?

Responses: All *Yes*.

4 - How was the Interaction between participants?

Responses: *Good, fine, satisfactory, friendly, proactive, OK, controlled, focused, harmonious, productive.*

Participants' Perception of the Experiment (Cont'd)

Appendix M

5 - Was the best possible solution found?

Responses: Ten (10) *Yes*, Seven (7) *No*, Seven (7) *I am not certain*

Others: *Yes, it was a decision that everyone favoured and agreed to.*

Yes, but there could have been a larger number of smaller events chosen.

No, because certain criteria (risks) were not taken into account, further debate and evaluation should be made before.

6 - Was the meeting adequately managed?

Responses: Eleven (11) *Yes*, and one (1) *I suppose.*

7 - What you liked the most?

Responses: *Use of technology, brainstorming and interacting exercise, to see the outcome and the graphs, quick organization of thoughts and criteria, new format of a meeting, seeing the different ideas and success factors.*

8 - What you disliked the most?

Responses: *Nothing, uncomfortable room, lack of interaction between participants, cut and dry answer, ranking the matrix (time consuming), pressure to come to a final decision, monotonous things like ranking all the things by numbers.*

I had an 8:30 class today, and was tired (could have used some extra rest) but it went fast and I did enjoy it nonetheless.

Preferred Task Facilitative Form

Appendix N

PREFERRED TASK FACILITATIVE FORM

Weight (Rj)	Attentiveness	Control	Interaction	Motivation	Outcome	Participation	Satisfaction	Timeliness	TOTAL
Pre-Experiment	0.776	0.402	1.126	0.959	0.776	1.326	0.801	0.000	
Post-Experiment	0.916	0.332	1.381	0.998	0.496	0.944	0.576	0.000	
WEIGHT	0.846	0.367	1.254	0.979	0.636	1.135	0.689	0.000	
FACILITATOR-DRIVEN FORM									
Post-Meeting Results	4.96	4.73	4.69	4.29	4.04	5.00	4.58	4.67	
Attribute Product	4.20	1.74	5.88	4.20	2.57	5.68	3.15	0.00	27.41
FACILITATOR/CHAUFFEUR-DRIVEN FORM									
Post-Meeting Results	4.50	4.38	4.46	4.17	4.44	4.81	4.73	4.13	
Attribute Product	3.81	1.61	5.59	4.08	2.82	5.46	3.26	0.00	26.63
Attribute Difference	0.39	0.13	0.29	0.12	-0.25	0.22	-0.10	0.00	0.78
Percentage	9.27%	7.40%	4.90%	2.80%	-9.90%	3.80%	-3.28%	0.00%	2.85%

Attentiveness - Statistical Significance

Appendix O

Source Information		Facilitator-Driven (FD)		Facilitator/Chauffeur-Driven (FCD)	
Replicates	Order\Scenario	SA	SB	SA	SB
P1	1st Meeting	4.5	4.3	3.5	5.0
	2nd Meeting	5.5	5.0	5.0	4.5
P2	1st Meeting	5.0	4.5	5.5	4.8
	2nd Meeting	6.0	4.3	4.8	4.5
P3	1st Meeting	4.8	5.5	3.5	5.3
	2nd Meeting	5.0	5.3	4.3	3.5

ANOVA Results Source of Variation	Degree of Freedom	Sum of Squares	Mean Squares	F Ratio	F(0.99)	Statistical Significance (Yes/No)
Mean		540.55				
Replicates	2	0.39	0.19	0.51	6.51	No
Treatments						
A - Facilitative Forms	1	1.26	1.26	3.32	8.86	No
B - Scenarios	1	0.03	0.03	0.09	8.86	No
C - Meeting Sequence	1	0.09	0.09	0.25	8.86	No
AB	1	0.35	0.35	0.92	8.86	No
AC	1	0.51	0.51	1.34	8.86	No
BC	1	1.55	1.55	4.08	8.86	No
ABC	1	0.22	0.22	0.58	8.86	No
Experimental Error	14	5.31	0.38			
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TOTAL	23	550.27				

Control - Statistical Significance

Appendix P

Source Information		Facilitator-Driven (FD)		Facilitator/Chauffeur-Driven (FCD)	
Replicates	Order\Scenario	SA	SB	SA	SB
P1	1st Meeting	4.5	5.5	2.0	4.8
	2nd Meeting	5.8	4.3	5.5	5.0
P2	1st Meeting	5.3	4.5	5.0	3.5
	2nd Meeting	5.3	5.5	5.3	4.3
P3	1st Meeting	4.3	4.8	3.3	3.3
	2nd Meeting	3.0	4.3	5.0	5.8

ANOVA Results		Degree of Freedom	Sum of Squares	Mean Squares	F Ratio	F(0.99)	Statistical Significance (Yes/No)
Source of Variation							
Mean			503.25				
Replicates		2	1.61	0.81	0.94	6.51	No
Treatments							
A - Facilitative Forms		1	0.77	0.77	0.90	8.86	No
B - Scenarios		1	0.07	0.07	0.08	8.86	No
C - Meeting Sequence		1	2.87	2.87	3.35	8.86	No
AB		1	0.00	0.00	0.00	8.86	No
AC		1	3.92	3.92	4.57	8.86	No
BC		1	0.30	0.30	0.35	8.86	No
ABC		1	0.07	0.07	0.08	8.86	No
Experimental Error		14	12.00	0.86			
TOTAL		23	524.87				

Interaction - Statistical Significance

Appendix Q

Source Information		Facilitator-Driven (FD)		Facilitator/Chauffeur-Driven (FCD)	
Replicates	Order\Scenario	SA	SB	SA	SB
P1	1st Meeting	4.0	5.5	3.8	5.3
	2nd Meeting	4.0	4.0	4.0	4.5
P2	1st Meeting	4.8	4.0	5.8	4.5
	2nd Meeting	4.5	4.8	4.3	4.5
P3	1st Meeting	5.3	5.3	4.3	5.3
	2nd Meeting	5.3	5.0	4.5	3.0

ANOVA Results Source of Variation	Degree of Freedom	Sum of Squares	Mean Squares	F Ratio	F(0.99)	Statistical Significance (Yes/No)
Mean		506.92				
Replicates	2	0.56	0.28	0.54	6.51	No
Treatments						
A - Facilitative Forms	1	0.30	0.30	0.59	8.86	No
B - Scenarios	1	0.05	0.05	0.10	8.86	No
C - Meeting Sequence	1	1.26	1.26	2.43	8.86	No
AB	1	0.00	0.00	0.01	8.86	No
AC	1	0.35	0.35	0.68	8.86	No
BC	1	0.30	0.30	0.59	8.86	No
ABC	1	0.07	0.07	0.14	8.86	No
Experimental Error	14	7.27	0.52			
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TOTAL	23	517.09				

Motivation - Statistical Significance

Appendix R

Source Information		Facilitator-Driven (FD)		Facilitator/Chauffeur-Driven (FCD)	
Replicates	Order\Scenario	SA	SB	SA	SB
P1	1st Meeting	3.8	4.5	3.5	4.5
	2nd Meeting	4.0	4.3	4.8	4.3
P2	1st Meeting	5.3	3.0	3.8	3.8
	2nd Meeting	5.0	3.5	4.0	5.3
P3	1st Meeting	4.8	4.5	3.8	4.3
	2nd Meeting	4.3	4.8	3.5	4.8

ANOVA Results Source of Variation	Degree of Freedom	Sum of Squares	Mean Squares	F Ratio	F(0.99)	Statistical Significance (Yes/No)
Mean		435.20				
Replicates	2	0.10	0.05	0.13	6.51	No
Treatments						
A - Facilitative Forms	1	0.08	0.08	0.20	8.86	No
B - Scenarios	1	0.04	0.04	0.10	8.86	No
C - Meeting Sequence	1	0.38	0.38	0.93	8.86	No
AB	1	1.60	1.60	3.98	8.86	No
AC	1	0.37	0.37	0.93	8.86	No
BC	1	0.13	0.13	0.34	8.86	No
ABC	1	0.02	0.02	0.04	8.86	No
Experimental Error	14	5.63	0.40			
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TOTAL	23	443.56				

Outcome - Statistical Significance

Appendix S

Source Information		Facilitator-Driven (FD)		Facilitator/Chauffeur-Driven (FCD)	
Replicates	Order\Scenario	SA	SB	SA	SB
P1	1st Meeting	4.3	5.5	3.5	4.3
	2nd Meeting	4.8	3.8	5.3	4.0
P2	1st Meeting	1.8	5.0	3.8	4.8
	2nd Meeting	4.0	4.0	4.8	4.0
P3	1st Meeting	2.8	3.8	4.8	5.5
	2nd Meeting	4.5	4.5	4.3	4.5

ANOVA Results		Degree of Freedom	Sum of Squares	Mean Squares	F Ratio	F(0.99)	Statistical Significance (Yes/No)
Source of Variation							
Mean			436.91				
Replicates		2	0.74	0.37	0.76	6.51	No
Treatments							
A - Facilitative Forms		1	0.96	0.96	1.96	8.86	No
B - Scenarios		1	1.04	1.04			
C - Meeting Sequence		1	0.28	0.28			
AB		1	0.60	0.60	1.23	8.86	No
AC		1	0.20	0.20	0.41	8.86	No
BC		1	4.86	4.86	9.92	8.86	Yes
ABC		1	0.17	0.17	0.34	8.86	No
Experimental Error		14	6.86	0.49			
TOTAL		23	452.62				

Participation - Statistical Significance

Appendix T

Source Information		Facilitator-Driven (FD)		Facilitator/Chauffeur-Driven (FCD)	
Replicates	Order\Scenario	SA	SB	SA	SB
P1	1st Meeting	4.3	4.8	5.0	5.3
	2nd Meeting	5.5	4.8	4.0	4.5
P2	1st Meeting	4.8	5.3	5.5	6.0
	2nd Meeting	4.8	5.3	5.0	4.3
P3	1st Meeting	4.8	6.0	4.0	5.0
	2nd Meeting	5.5	4.5	5.0	4.3

ANOVA Results Source of Variation	Degree of Freedom	Sum of Squares	Mean Squares	F Ratio	F(0.99)	Statistical Significance (Yes/No)
Mean		583.12				
Replicates	2	0.51	0.26	1.04	6.51	No
Treatments						
A - Facilitative Forms	1	0.26	0.26	1.07	8.86	No
B - Scenarios	1	0.15	0.15	0.62	8.86	No
C - Meeting Sequence	1	0.00	0.00	0.02	8.86	No
AB	1	0.00	0.00	0.00	8.86	No
AC	1	2.10	2.10	8.59	8.86	No
BC	1	0.40	0.40	1.64	8.86	No
ABC	1	0.22	0.22	0.90	8.86	No
Experimental Error	14	3.42	0.24			
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TOTAL	23	590.19				

Satisfaction - Statistical Significance

Appendix U

Source Information		Facilitator-Driven (FD)		Facilitator/Chauffeur-Driven (FCD)	
Replicates	Order\Scenario	SA	SB	SA	SB
P1	1st Meeting	4.3	5.3	4.0	5.3
	2nd Meeting	5.0	5.0	5.0	4.8
P2	1st Meeting	5.0	3.3	4.0	5.0
	2nd Meeting	6.0	3.0	5.3	5.5
P3	1st Meeting	4.5	5.0	4.0	5.3
	2nd Meeting	4.5	4.3	4.3	4.5

ANOVA Results Source of Variation	Degree of Freedom	Sum of Squares	Mean Squares	F Ratio	F(0.99)	Statistical Significance (Yes/No)
Mean		524.54				
Replicates	2	0.35	0.17	0.37	6.51	No
Treatments						
A - Facilitative Forms	1	0.14	0.14	0.29	8.86	No
B - Scenarios	1	0.01	0.01	0.01	8.86	No
C - Meeting Sequence	1	0.20	0.20	0.43	8.86	No
AB	1	2.16	2.16	4.60	8.86	No
AC	1	0.08	0.08	0.17	8.86	No
BC	1	1.71	1.71	3.63	8.86	No
ABC	1	0.01	0.01	0.01	8.86	No
Experimental Error	14	6.58	0.47			
TOTAL		23	535.76			

Timeliness - Statistical Significance

Appendix V

Source Information		Facilitator-Driven (FD)		Facilitator/Chauffeur-Driven (FCD)	
Replicates	Order\Scenario	SA	SB	SA	SB
P1	1st Meeting	4.5	5.0	2.0	4.5
	2nd Meeting	5.5	4.5	5.0	4.3
P2	1st Meeting	5.5	4.8	4.0	4.0
	2nd Meeting	5.3	4.0	5.0	4.5
P3	1st Meeting	3.8	4.3	3.3	3.0
	2nd Meeting	3.5	5.5	5.0	5.0

ANOVA Results	Degree of Freedom	Sum of Squares	Mean Squares	F Ratio	F(0.99)	Statistical Significance (Yes/No)
Source of Variation						
Mean		466.40				
Replicates	2	0.86	0.43	0.75	6.51	No
Treatments						
A - Facilitative Forms	1	1.82	1.82	3.20	8.86	No
B - Scenarios	1	0.04	0.04	0.07	8.86	No
C - Meeting Sequence	1	2.94	2.94	5.18	8.86	No
AB	1	0.04	0.04	0.07	8.86	No
AC	1	2.41	2.41	4.24	8.86	No
BC	1	0.67	0.67	1.17	8.86	No
ABC	1	0.33	0.33	0.58	8.86	No
Experimental Error	14	7.94	0.57			
TOTAL	23	483.44				

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