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Satisfaction with outcome and process from web-based meetings for idea generation and selection: The roles of instrumentality, enjoyment, and interface design

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ABSTRACT

This study examines individual group member satisfaction with outcome and process from an idea generation and selection task via a Group Support System. 126 Participants formed 20 virtual teams, each completing a 20 minute task, followed by a questionnaire about their experience. The study validated a proposed scale for a new construct and tested several hypotheses using a structural equation model. While the new construct of perceived instrumentality did not directly influence satisfaction with outcome, satisfaction with process was significantly influenced by perceived task enjoyment and interface design aesthetics. Scholars of GSS meeting satisfaction are therefore advised to include hedonic constructs in their research models. The study's qualitative data also indicated that a GSS designed to support evaluability within the group could lead to increased satisfaction with process within the majority of group members.

1. Introduction

Increasing globalization has made virtual teamwork quite common in business organizations, government agencies, and educational institutions (Dasgupta et al., 2002; Saafein and Shaykhian, 2014; Saunders and Ahuja, 2006). Most virtual teamwork, however, is still conducted through email, chat, or teleconferencing (Quan-Haase et al., 2005) rather than taking advantage of specialized e-collaboration technologies, called group support systems (GSS). GSS have been available since the late eighties, but their acceptance by managers and end-users in organizations has been surprisingly low (Dennis and Reinicke, 2004; Roszkiewicz, 2007). GSS structure interaction processes within groups in such a way as to optimize problem formulation, idea generation and evaluation, decision-making, and consensus building (Gallupe et al., 1988). Typically, a GSS

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is used to aid in electronic brainstorming and voting (Srite et al., 2007) and for relatively short-term tasks in collocated or virtual teams (Leinonen et al., 2005). This study focuses on virtual teams, defined as self-managed groups of geographically dispersed knowledge workers formed ad hoc to perform an information-processing task via electronic communication media (Curşeu et al., 2008).

Two factors – increased productivity and group member satisfaction – are considered key predictors of success in virtual teamwork (Kahai et al., 2003). Yet, when it comes to GSS use, productivity gains have rarely been accompanied by increases in participant satisfaction (Brown et al., 2010). Kerr and Murthy (2004), for instance, examined satisfaction from a realistic business-consulting task requiring idea generation and evaluation. They found that participants in GSS groups were less satisfied with their team experience and group output compared to participants in non-supported, face-to-face groups. Even GSS that have been judged by end-users to be useful and easy to use – the two key determinants of technology acceptance (Venkatesh, 2000) – have left these same users feeling dissatisfied from the GSS meeting (Briggs et al., 2006).

Although satisfaction has been examined in many GSS studies (Fjermestad and Hiltz, 2000) there is a dearth of research on what actually causes various types of satisfaction in GSS meetings (Brown et al., 2010). Dennis et al. (2003) proposed a model to integrate GSS within the technology acceptance model (TAM), but satisfaction was not included as a dependent variable. Other studies of end-user satisfaction mainly utilize measures of system characteristics and information content (Wixom and Todd, 2005), neglecting the social psychology aspects of teamwork. To our knowledge, the most rigorously tested model of satisfaction as it applies to GSS is the satisfaction attainment theory (SAT) (Briggs et al., 2006; Reinig, 2003). SAT operationalizes meeting satisfaction as a positive affective arousal with respect to meeting outcome and meeting process, and posits this response to be a function of perceived net value of goal attainment (PGA) from the meeting. We observe a weakness to this model, however, in its limited ability to guide researchers and practitioners to successfully hypothesize about the effects of various technological or task structures on meeting satisfaction. Specifically, PGA is a high order construct in the context of group meetings, where individual and group goals are quite ambiguous. The main theoretical objective of this study, therefore, is to test SAT by replacing PGA with antecedents shown to have explanatory value in the formation of user attitudes as per the TAM approach.

This objective is driven by two research questions. First, what role could a *social utility* motive play in forming satisfaction with outcome (SO) in a GSS meeting? A construct called perceived instrumentality is operationalized and tested as an antecedent to SO. Second, what role do hedonic motives play in forming satisfaction with process (SP) in a GSS meeting? Perceived task enjoyment is tested as an antecedent to SP, and two system quality characteristics – perceived interface design aesthetics and perceived ease of use – are tested as determinants of perceived task enjoyment.

To carry out this investigation, an experimental study was conducted with twenty virtual teams. Each team met online for a 20-min idea generation and selection task. All 126 participants used an originally developed GSS for this purpose and completed a survey about their experience. A structural equation modelling approach, using partial least squares, was then applied to test several hypotheses. Qualitative data from the session transcripts and two open-ended survey questions was analysed as well.

The rest of this paper is structured as follows. In Section 2 we provide some background on idea generation and evaluation tasks and on perceived goals in teamwork contexts. Section 3 presents the research model and hypotheses, while Section 4 outlines the methodology, including the experimental design, task, subjective and objective measures, and technology used. Section 5 provides descriptive statistics and the results from the measurement and structural models. The qualitative data from the study and the quantitative findings and implications are discussed in Section 6. Section 7 concludes with the study's limitations and recommendations for future research.

2. Background

2.1. Idea generation and evaluation

Most group tasks include some form of idea generation, development, evaluation, and selection (McGrath, 1984). Brainstorming, in particular, has become the most prominent method of idea generation in organizations (Dennis and Williams, 2003). It is guided by four principles: (i) do not criticize others' ideas; (ii) include wild or unusual ideas; (iii) generate as many ideas as possible, and (iv) build and expand on others' ideas (Michinov, 2012). However, in a typical brainstorming session at knowledge-based organizations – such as management consultancies, design firms and advertising agencies – generating a large numbers of raw ideas is rarely the ultimate goal. Instead, team members strive to produce a limited number of good ideas to select for further development and implementation (Rietzschel et al., 2006). Some form of peer evaluation is therefore included near the end of most meetings (Kerr and Murthy, 2004).

Evaluation of ideas can be about their quality or quantity. In most lab studies of group brainstorming, evaluability is quantitative and relates individual or group *productivity rate* to some subjective or objective standard. Shepherd et al. (1996), for instance, publicly displayed a line graph showing the group's real-time productivity rate in comparison to some mythical average. Similarly, Jung et al. (2005) embedded a bar chart in the GSS interface displaying the idea submission rates of each team member. These interventions boosted participants' productivity in both studies, although in the latter study some group members started to submit lower quality ideas after realizing the performance feedback was merely quantitative (Jung et al., 2005).