

Chapter 5.4

Supporting Structured Group Decision Making Through System-Directed User Guidance: An Experimental Study

Harold J. Lagroue III

University of Louisiana - Lafayette, USA

ABSTRACT

This article addresses an area which holds considerable promise for enhancing the effective utilization of advanced information technologies: the feasibility of using system-directed multi-modal user support for facilitating users of advanced information technologies. An application for automating the information technology facilitation process is used to compare group decision-making effectiveness of human-facilitated groups with groups using virtual facilitation in an experiment employing auditors, accountants, and IT security professionals as participants. The results of the experiment are presented and possible avenues for future research studies are suggested.

INTRODUCTION

Intelligent information technologies have demonstrated considerable potential in helping users more effectively utilize advanced IT applications. Indeed, their widespread use as components of help functions in software applications has made the appropriation process for such software considerably less taxing. On a more complex level, expert systems and other “advice-giving intelligent systems” have proven to be effective in such diverse fields as medicine and finance. Their potential as “explanation facilities” for assisting users in meaningful ways is well documented (Berry & Broadbent 1987; Shortliffe, 1976).

Several researchers have argued that intelligent systems may be the most significant technical contribution to the effective utilization of information

technology (Crowston & Malone 1988, Johansen 1988). In the context of group decision making, a number of researchers have claimed that expert systems may hold the potential of transforming group decision support systems (GDSS) from merely “passive agents” that process and present group decision-making information, into “active agents” that enhance group interaction (Aiken, Liu Sheng, & Vogel, 1991, Ellis et al. 1988, Liu Sheng et al. 1989). Aiken, Liu Sheng and Vogel (1991) have asserted that the goal of integrating expert systems with group decision support systems should be in designing systems that facilitate simplified and enhanced group decision-making.

A number of research studies have demonstrated that system-directed user guidance holds the potential of replacing human facilitation for supporting group decision making. Limayem and DeSanctis (2000) found that automated facilitation could result in higher levels of understanding and improved perceptions of the group decision making process. In a follow-up study, Limayem (2003) compared human facilitation with automated facilitation and found that the latter was as effective as human facilitation in improving faithfulness of appropriation.

Wong and Aiken (2003) likewise demonstrated that automated facilitation could be as effective as expert facilitators—and better than novice-human facilitators—for idea generation and ranking tasks. However, their study did not consider the effect of using automated facilitation for providing structured decision-making support, or for affecting satisfaction levels of participants. Likewise, Ho and Antunes (1999) examined the effectiveness of an automated tool for meeting planning, but their results were inconclusive. Chalidabhongse et al. (2002) similarly studied the effects of an intelligent facilitation agent and found that their automated system resulted in greater group participation, more ideas generated, and less group distraction. However, the effects of automated facilitation on intellectual tasks were not considered.

Still other studies have proposed integrating expert systems with group support systems but have not empirically tested the effectiveness of such systems. Aiken, Liu Sheng and Vogel (1991) examined potential synergies between intelligent systems and GSS and described a system which would effectively integrate the two technologies, but they did not empirically evaluate their system. Lopez et al. (2002) proposed the possibility of embedding facilitation features in group support systems, but likewise, no empirical study was conducted. Recently, Briggs, DeVreede and Nuna-maker (2003) introduced their “thinkLets” concept designed to help systemize the GSS facilitation process, but did not empirically test it.

Because qualified facilitators are not always available or affordable, the need for automated systems that are capable of effectively replicating the human facilitator function is apparent. Moreover, by systemizing the facilitation process and ensuring its consistent replication, the benefits from advanced information technology use can be more predictable (Briggs et al. 2003).

This research addresses an area which holds considerable promise for enhancing the effective utilization of advanced information technologies: the feasibility of using system-directed guidance for facilitating users of advanced information technologies. An application for automating the information technology facilitation process is used to compare decision-making effectiveness of human-facilitated groups with groups using system-directed facilitation in an experiment employing auditors, accountants, and IT security professionals as participants. Comparisons of the two methods of facilitation are made on the basis of brainstorming effectiveness and user satisfaction.

DECISIONAL GUIDANCE

Directly related to the idea of system-directed facilitation is the concept of decisional guidance,

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