

GSS Research for E-Collaboration

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INTRODUCTION

Group Support Systems (GSS) are a subset of Decision Support Systems and address the organizational task related needs of groups in areas such as brainstorming, alternatives generation, alternative organization, prioritization, & evaluation, group memory, and communication through the use of information and communication technologies. Group Decision Support Systems (GDSS), a subset of GSS address the decision making needs of groups. The roots of GSS go back to early and middle 1980s. During the 1990s, the GSS research stream (i.e., using decision, information, and communication technologies to support the needs of individuals, groups, and organizations) was one of the popular topics amongst researchers and as a consequence, more than 200 GSS related publications exist (Prasad & Tata, 2005).

Initial GSS research focused on comparing face-to-face groups with that of computer-supported groups. Subsequent research dealt with distance and time dispersion issues. It is at this time, that the term *Distributed Group Support System* (DGSS) was defined to identify distributed groups that use GSS. The late 1990s and early 21st century saw a tremendous increase in the use of computer networks (Internet, Intranet, Extranet, etc.). The widespread availability of Internet at many parts of the world has led many GSS developers and researchers to focus on collaboration through the Internet. Although the terms e-collaboration and virtual teams precede the widespread availability and use of the Internet, the Internet has given new collaboration opportunities and challenges.

Kock and Nosek (2005) identify two trends within the field of e-collaboration research. First is the development of subcommunities devoted to the examination of a particular topic. The second trend is on integrating prior research and identifying topics of relevancy for e-collaboration. Our study falls within the second trend noted above. It is our argument that findings of GSS/GDSS research cannot be blindly transferred to e-Collaboration research and there is a need to determine the

extent of applicability, relevancy, and boundaries. The purpose of this study is to examine the previous GSS findings and assess their implications and applicability within in the e-collaboration environment. We begin by providing a brief background to e-collaboration and then proceed to assess the GSS research findings. After identifying important future trends, we provide concluding remarks.

BACKGROUND

E-collaboration is “collaboration among individuals engaged in a common task using electronic technologies” (Kock, Davison, Ocker, & Wazlawick, 2001). The growth and development of GSS and its specialized applications such as GDSS and GDSS provided one of the foundations for the growth, use, and acceptance of e-collaboration tools. Benefits of e-collaboration benefits include

- a. Any place/any time meetings and training/learning
- b. Process loss reduction associated with face to face communication (see Marsden & Mathiyalakan, 1999; Steiner, 1972)
- c. Advanced communicational, information, and decisional support
- d. Cost reduction
- e. Productivity enhancement
- f. Increase in profits and customer/business partner support through better planning, lead and delivery time reduction
- g. Process integration
- h. Strategic effects

To achieve these stated benefits, e-collaboration tools provide modules for e-mail/automated e-mail/unified messaging, instant messaging, whiteboards, audio/video conferencing, threaded discussion, blogs, calendaring and scheduling, directory services, document sharing, knowledge and data repositories, databases, content management, group/individual decision making

support, alternative generative and voting, hardware/software sharing, project management, and others.

DOMINANT ISSUES OF GSS/GDSS

Over the last 20 years, researchers have focused their attention on a number of topics within the GSS research stream. Initial focus was on comparing outcome measures for computer supported and non-computer-supported groups. Subsequent research has focused on alternative GSS system designs, trust, leadership, conflict management, group history and membership, media richness, and so forth. While initial results suggest mixed findings on GSS usefulness, later results do show that GSS can be valuable tools for collaboration.

Given that GSS/GDSS technologies of the late 1980s and 1990 is vastly different to today's e-collaboration technologies. Technology adoption, implementation, and use has been one of the dominant theme of IS research over the past 40 years has been. Even though technology changes over time, it is important to examine past practices and extrapolate guidelines and suggestions for use with the newer technology. The issue then becomes how should the system be designed and how to structure the process and inputs to maximize organizational benefits. In this respect, with limited availability of space, we identify the following as important issues that need to be reexamined in the e-collaboration environment: (a) system design, appropriate or relevant technology toolbox, and task-technology fit; (b) group structure; and (c) process issues.

THE APPLICABILITY OF GSS/GDSS RESEARCH TO E-COLLABORATION

System Design, Appropriate or Relevant Technology Toolbox, and Task-Technology Fit

The technology landmark has changed dramatically, both in terms of number of players and the level of technological sophistication within the last decade. Two main findings and their applicability to the e-collaboration environment emerge from an analysis of GSS literature. First, the GSS technology and system design play an important role in meeting outcomes (Benbasat & Lim, 1993; Sambamurthy & Poole, 1992; Zigungs,

DeSanctis, & Billingsley, 1991). Previous research also suggests the need for task and the technology fit (Easton & Nunamaker, 1990; Goodhue & Thompson, 1995). Information richness is the ability of a medium to facilitate shared meaning or convey information (Daft & Lengel, 1984). This suggests that some media have the ability to transmit more cues than others. Daft and Lengel (1984) propose that different media could be ranked in terms of feedback, multiple cues, language variety, and personal focus. Prior GSS studies rarely used multimedia capabilities. The interaction with other users was primarily through keyboard typing and where permissible nonverbal cues. Some of the later GSS studies did use rudimentary audio conferencing capabilities. Nowadays with bandwidth becoming a nonissue and the availability of Web-based software, e-collaboration have multimedia capabilities and provide rich media for collaboration. The different e-collaboration tools available in the marketplace vary in terms of capabilities, cost, features, and so forth, and it is commonplace for organizations to employ diverse technologies. A group engaged in e-collaboration may use different tools at different collaboration points. Participants may also be engaged in multi tasking during the collaboration process. In this environment, there is a need to examine the applicability and relevance of previous work on task-technology fit.

Second, while IS research is rich with literature of technology adoption and implementation, such studies with emphasis on strategic perspectives are rare. Previous GSS research has generally focused on individual and group level. There is a need to examine technology adoption and implementation from a strategic perspective. Issues of inhibitors, cost-benefit analysis, organizational transformation, formation and use of virtual teams, technology and business process re-configuration, design and integration of interorganization systems need to be examined at greater depth if e-collaboration is to be a success.

Group Structure

Group structure refers to issues related to group size, status/power structure, group norms, history, and so forth (Pinsonneault & Kremer, 1990). Initial interest in groups arose due to the belief that pooling the knowledge and abilities of several individuals is beneficial to organizations. The primary rationale for using GSS is to minimize process losses. Processes losses

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