

Chapter 1.8

Group Decision Support Systems

John Wang

Montclair State University, USA

James Yao

Montclair State University, USA

INTRODUCTION

Group decision support systems (GDSSs) which aim at increasing some of the benefits of collaboration and reducing the inherent losses are interactive information technology-based environments that support concerted and coordinated group efforts toward completion of joint tasks (Dennis, George, Jessup, Nunamaker, & Vogel, 1998). The term *group support systems* (GSSs) was coined at the start of the 1990's to replace the term GDSS. The reason for this is that the role of collaborative computing was expanded to more than just supporting decision making (Patrick & Garrick, 2006). For the avoidance of any ambiguities, the latter term shall be used in the discussion throughout this paper.

If we trace back, GDSSs are specialized model-oriented *decision support systems* (DSSs) or management decision systems that were born in the late 1960s. By the late 1970s, a number of

researchers and companies had developed interactive information systems that used data and models to help managers analyze semi-structured problems. From those early days, it was recognized that DSSs could be designed to support decision makers at any level in an organization. DSSs could support operations, financial management, and strategic decision making.

BACKGROUND

In the early 1980s, academic researchers developed a new category of software to support group decision making. Execucom Systems developed *Mindsight*, the University of Arizona developed *GroupSystems*, and researchers at the University of Minnesota developed the *SAMM system* (Power, 2003). These are all examples of early GDSSs. The increased need for GDSSs arises from the fact that decision making is often

a group phenomenon, and therefore computer support for communication and the integration of multiple inputs in DSSs is required. The desire to use GDSSs therefore comes from the need of technological support for groups.

GDSSs are designed to remedy the dysfunctional properties of decision-making groups. These systems are becoming popular in aiding decision making in many organizational settings by combining the computer, communication, and decision technologies to improve the decision-making process. These systems use a key tool to improve the quality of decisions made by a group. This key tool is the anonymity of members of a decision-making group. The purpose of GDSSs is to maximize the benefits of group work, while minimizing the dysfunctions of group work. This maximization and minimization can be made possible by GDSSs mainly by two factors: anonymity and parallelism.

MAIN FOCUS

Strengths and Weaknesses of GDSSs

GDSSs provide a lot of support for communication, deliberation, and information flow especially for group activities that may be distributed geographically and temporarily. Group work has numerous benefits and advantages. First, groups are better at understanding problems and catching errors than individuals. Second, a group has more information than any one member which when combined can create new knowledge. Third, working in a group stimulates creativity and synergy. Finally, groups balance out the risk-tolerant and risk-averse. GDSSs offer many benefits. First, GDSSs support parallel information processing, parallel computer discussion, and generation of ideas. Second, they promote anonymity, which allows shy people to contribute and helps prevent aggressive individuals from driving the meeting.

Finally, these systems help keep the group on track and show the big picture. The two keywords here are parallelism and anonymity (Turban, Aronson, & Liang, 2005).

Some of the potential dysfunctions of group work are not automatically eliminated by GDSSs. First, as mentioned earlier, groupthink is where people begin to think alike and not tolerate new ideas. We can also include inappropriate influences, and free-riding. Second are the lack of coordination, excess time consumption, poor quality solutions, and nonproductive time. Third are the duplication of efforts, and high cost of meetings, including travel. Finally, information overload, concentration blocking, and group misrepresentation add to the potential dysfunctions of group work. Process dysfunctions are caused by structural characteristics of the group setting that could hinder a group from reaching its full potential. Process dysfunctions hinder productivity because of unequal participation or unequal air time; this happens in a setting where only one person can take control of the floor. This sort of dysfunction can be countered by the use of computerized exchanges because people may enter their comments and thoughts simultaneously. Power (2003) states that simultaneous expression of ideas may be beneficial for the quantity of ideas generated because of the computer's capacity for concurrency. Finally, process dysfunctions are usually caused by limitations in the structure and form of meetings.

Social dysfunctions, as Power (2003) describes, can hinder group productivity through undesirable social processes that occur in the group. For example, a group may limit the quality and quantity of input from any of its members by social processes such as evaluation apprehension, conformity pressures, free riding, social loafing, cognitive inertia, socializing, and domination due to status imbalance, groupthink, and incomplete analysis. These problems arise from processes present in all groups and are rooted in the ways in which group members change their behavior

6 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/group-decision-support-systems/8776

Related Content

The Temporal Effect on Collaboration in a Reliable Collaborative System

Rabie Barhoun (2022). *International Journal of e-Collaboration* (pp. 1-9).

www.irma-international.org/article/the-temporal-effect-on-collaboration-in-a-reliable-collaborative-system/299010

Ecologies of Information and Communication Technology Platform Design for e-Government Service Provision: Actors, Influences, and Fields of Play

Shefali Virkar (2016). *Cultural, Behavioral, and Social Considerations in Electronic Collaboration* (pp. 37-68).

www.irma-international.org/chapter/ecologies-of-information-and-communication-technology-platform-design-for-e-government-service-provision/140703

Virtual Worlds for Collaborative Meetings

Arlene A. Flowers and Kimberly Gregson (2011). *Business Organizations and Collaborative Web: Practices, Strategies and Patterns* (pp. 221-244).

www.irma-international.org/chapter/virtual-worlds-collaborative-meetings/54057

Supporting Secure Information Flow: An Engineering Approach

Shane Bracher and Padmanabhan Krishnan (2012). *International Journal of e-Collaboration* (pp. 17-35).

www.irma-international.org/article/supporting-secure-information-flow/61403

Project Management Issues in IT Offshore Outsourcing

Kathy S. Schwaig, Steve Gillam and Elke Leeds (2008). *E-Collaboration in Modern Organizations: Initiating and Managing Distributed Projects* (pp. 142-160).

www.irma-international.org/chapter/project-management-issues-offshore-outsourcing/8763