

A Case Study of a Defense Health Agency: The Significance of Group Support Systems:

Chapter 2

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Literature Reviews

The keywords used for the purpose of literature review of this research were group support system, definition of GSS, focal group meetings, advantages and disadvantages of GSS, GSS meetings, objectives of GSS, objectives of focal group meetings, decision making, enhancing communication, face-to-face communication, role of technology in GSS, leadership in GSS, and history of GSS. In the course of resources selection, the choice was made based on the year that the sources were published in (2011 or later) and the credibility of the databases that they came from (peer reviewed journals and scholarly databases). The inclusion criteria for the sources chosen for the literature review incorporate the trustworthiness of the database, which the source was retrieved from, the year, which the source was released in, and the issue, which the author rendered in their paper.

The methods used in the previous research also need to be brought up in this study. One must bear in mind that the research carried out previously also rendered the problem of measuring the relationship between the key variables with the help of a qualitative method. The addition of the thematic analysis, which can be observed in this study, therefore, can be viewed as a step forward in designing the methodology for researching a specific issue.

The vast growth and development in the field of education has been coupled with mammoth expansion of information that is accessible to scholars doing research on any specific topic. Such information is available in both hard copies and soft copies. As a result, libraries are unable to cope with maintaining records of the incessant increase in the information. As such, schools, colleges, and universities have established their own academic libraries to cope with the

growing needs of scholars. As is understood by the alterations in the information management realm, there is no library that is capable of storing all available information. Information technology comes to the rescue at this point. At present, librarians try to acquire the maximum number of computers, with the help of which scholars can access information from all over the world without having to travel to a different location (Hart, 1998). Computers have been at scholars' disposal since the 1970s (Huber, 1980; Kerr & Hiltz, 1982).

The successful development of an organization depends on a plethora of factors, especially those connected with structure, culture, and management mechanisms. A brief analysis of GSS has created implications for further research to define how the GSS influence efficiency and overall performance. Integrating technology into an organization requires a total reconstruction of business management. To accomplish the research, a special emphasis on several aspects is necessary. First, it is necessary to examine various definitions of GSS, as well as how organizations apply them in diverse fields. Second, it is purposeful to consider how GSS can contribute to decision making and conflict resolution in a global setting.

Third, the study will involve an attempt to assess research studies dedicated to analyzing the connection between technology and social environment to highlight the pitfalls of current management. Fourth, it is important to examine theories related to the GSS concept, among which the theory of acceptance and task closure theory that focus on the degree of interaction between a computer-based environment and a social medium are of particular concern. Finally, the research will also refer to the connection between the integration of a support system and its influence on value creation, norms, and ethics. The premise of all these approaches is the constant interaction between virtual tools and collaborative environment to ensure the support of and flexibility for teamwork.

Due to unceasing competition, organizational leaders are trying to curtail expenditures, augment the quality of their products, provide better customer service, and concentrate on research and development (Akkirman & Harris, 2005). Groups, rather than individuals, make important decisions in both private and public organizations (Matsatsinis et al., 2005). Healthy communications between team members can be beneficial for the company because such communications increase the knowledge base of the employees and allow people to share important information in a much more expeditious manner (Woltmann, 2009).

Due to the geographical locations of team members, such communication is not always possible. Another problem with face-to-face communication is that each individual has less time to express his or her ideas and thoughts. This type of drawback is known as air fragmentation (Dahlberg, 2007). There is also a possibility of domination by a single person. People fear to express their views because they are afraid that if their ideas or thoughts are significant others will laugh at them (Wigert et al., 2012). Another reason for not expressing ideas is that individuals believe that if their superiors do not like their ideas or thoughts, they may receive a reprimand or a demotion. Earlier research in organizational field showed that in face-to-face meetings, almost 50% of the time is wasted (Allen et al., 2012).

The role of GSS becomes inevitable (Hayen et al., 2007). Group support systems are a tool that facilitates communication between geographically distant team members through computer system (Kim, 2006; Mennecke et al., 1992; Pendergast & Hayne, 1994). Group support systems provide organizations with various functions, such as discussions, communications, and data transfer (Ready et al., 2004). These systems permit individuals and organizations to categorize, assess, arrive at conclusions, and prepare for action (Lewis & Shakun, 1996; Vreede et al., 2003).

Title Searches, Articles, Research Documents, and Journal Researched

An array of information in the field of GSS was available. Reviewing available information contributed to the development of a historical overview of GSS. The focus of the study was on investigating whether business organizations are ready for GSS. The literature indicated different areas, where organizational leaders use GSS. According to the existing evidence, the evolving features of GSS affect their variables, the identification of which requires considering the evolving characteristics of GSS and performing a historical review of the subject matter.

Deriving the necessary literature presupposed locating various possible sources of information. The search for GSS involved many sources, including peer-reviewed journals from the University of Phoenix's EBSCO host database, ProQuest database, InfoTrac database, Digital Dissertations, and ERIC database. Google searches also included articles regarding GSS. Multiple Google and Yahoo! Online searches contributed to the identification of necessary resources. Results included articles from more than 300 peer-reviewed journals and 22 books about GSS. Articles also came from different company websites where real-life applications of GSS are obtainable.

Group Support Systems

A brief evaluation of GSS has presented the term in the context of technological support that enhances project collaboration through integrating digital communication by means of various resources and tools (Andres, 2010; Brown et al., 2010). However, there are many other alternative views on the scope and role of GSS in an organizational setting. Ackermann and Eden (2011) discovered that GSS are a representation of a cognitive theory due to their influence on organizational activities at all levels. Organizations have employed GSS to enhance the

negotiation of strategy-making groups in an agreed direction. Ackermann and Eden (2011) also insisted that “A GSS may particularly facilitate psychological negotiation within groups, supporting groups in reaching agreements about strategic direction” (p. 294). To understand the context, within which GSS are used, the focus should be on a set of strategic interventions within a multinational organization. This particular use of technology-based support systems can allow group leaders to examine cognitive dynamics, namely, the means for participants to contribute to the agreement and information sharing between group members. Ackermann and Eden (2011) insisted that the use of individual cognition, compared with collective cognition, shapes the underpinning for group negotiation to a greater extent. Although individual cognition prevents an understanding of the role of GSS in a group, it is still vital to discuss GSS within the context of changing cognitions.

Individual thinking is indispensable to evaluating how negotiation changes in the course of introducing separate ideas and strategies. In this respect, GSS build the tools that allow reflecting the key changes occurring. The GDR applied as a GSS platform wholly supports this concept of narrowing into individual contributions during meetings. No two contributions are identical, and as such, collecting diverse ideas from different persons creates a channel for easier solutions to complex organizational aspects (Salmon, 2012). The GDR acknowledges that every contribution is unique and can contribute to problem solving and decision making. Herein the significance of interviews is the key tool for retrieving information lies.

Jongsawat and Premchaiswadi (2011) also discussed the changing awareness in research studies. Because the basis of group cognition is the information the members use during decision making, group awareness indicates the readiness and availability of a team while working on a particular project (McFarlane, 2013). In this respect, GSS are the tools used to identify the

degree of group awareness (Kolfshoten et al., 2012). The system also serves as “an integrated computer-based system to facilitate the solution of unstructured or semi-structured tasks by a group that has joint responsibility for performing the specific task” (Jongsawat & Premchaiswadi, 2011, p. 232). Group support systems enable organizational leaders to make effective decisions and create viable solutions.

Aside from the focus on the computer-based environment, specific attention should be brought to the role of social networks and face-to-face communication in changing attitudes of group members who enter a virtual space. Smith and McKeen (2011) asserted the IT system shapes the basis of collaboration between team members that cannot access face-to-face communication. In this respect, GSS can be an ideal synergy of the IT environment with the participants’ readiness to employ software for enhancing decision making and communication. Istudor and Duță (2010) also supported this perspective and referred to a GSS as “an interactive software-based system meant to help decision-makers to compile useful information from raw data, documents, personal knowledge, and/or business models and artificial intelligence-based tools to identify, model and solve decision problems” (p. 191).

Hence, GDSS rely on the synchronization of people, software, hardware, and protocols so that the aforementioned elements of the company could work flawlessly. With regard to the above-presented terms, GSS embrace a range of important components, issues, and conditions, under which people can effectively interact. Computer-based systems, therefore, seek to support activities through interactive communication. The degree, to which solutions are available, identifies their usefulness. The human factor contributes to the effectiveness of online communication in terms of the competence and experience of the team members in applying technological tools (Choi et al., 2010).

Group Decision Making and Conflict Resolution

With regard to proposed decisions, the main role of GSS lies in improving decision making and conflict management in a team (Goh & Wasko, 2010). The specified function is especially important with regard to the global setting because organizations are operating in increasingly culturally diverse environments. A virtual decision-making process gains momentum in the globalization process. Decision making tendency also leads to collective problem management by employees, whose mobility can be increased through Web-based collaborative tools (Kerr & Hiltz, 1982).

Rapid and interactive decision making is a facilitator to the development of virtual team software and support systems, as well as the promotion of efficient conflict management and improved problem solving (Huang et al., 2010). The integration of IT Solutions contributes to the proliferation of much faster and more practical solutions proposed in an online setting through social networking platforms, microblogs, and discussion forums (Andres, 2010). Turban et al. (2011) referred to a fit-viability model that assists in evaluating whether social software is suitable to a decision task orientation, as well as organizational development. Turban et al. (2011) found it vital to consider organizational culture and structure because they greatly affect the readiness of employees to accept changes.

The methods that Turban et al. (2011) employed can be defined as those allowing for an examination of the connection between a decision-making process and GSS and focused on analyzing the various schemes and measures that organizations should integrate in a software-regulated environment to ensure successful decision making. In the course of the study, Lee and Dennis (2012) concluded, “The participants in an IT-enabled group decision-making meeting can import from the already existing socially constructed world” (p. 21). Management can identify

virtual reality with face-to-face communication because it also demonstrates interaction of individuals to provide viable solutions.

Group support systems, as important sources of enhancing communication, provide a solid ground for reconstructing decisions. The key justification for teamwork to exist in the realm of business and entrepreneurship concerns its ability to integrate the team members into a single entity (Goh & Wasko, 2010). Traditional decision making implies a number of elements, including employment environment, cultural background, and employees' needs. The evolution of group support into a technologically enabled network over time creates numerous challenges for sustainable operation. In this respect, Antunes and Costa (2010) supported the idea that "group support systems... are seen not only as a communication support, but also as a decision-enabling technology, supporting debate, organization of ideas, simulation and analysis of consequences, and ultimately, enabler of decisions" (p. 198). Group support systems may also be defined as media that enhance knowledge acquisition, quality of decisions, and employees' motivation to participate in negotiation.

Working in traditional team environments has a positive influence on instant negotiation for various urgent issues, but a globalized approach to management involves developing new mechanisms that can solve the problem of geographical location. Hoffman et al. (2011) noted that the growth of collaborative teams is central to enabling organizations to adopt and implement GSS. The introduction of GSS has provided new alternatives for cooperating and group decision making. Aside from enhanced communication, GSS positively contribute to human resource management. Yao et al. (2010) emphasized that GSS have a capacity to enhance human resource management through efficient communication strategies, build collaborative teams and promote teamwork (p. 401). While introducing a technology-supported environment is

a major part of the GSS implementation, the focus on employees' needs and welfare remains a crucial point.

A globally driven realm that dictates new, software-oriented settings predetermines recent trends in developing business organizations. The proposed case study has concluded that GSS are not only periphery systems enhancing communications but also the main tools for establishing relationships between geographically separate areas. The integration of GSS into a business setting promotes sustainable human resource management and develops new strategies for decision making and conflict management.

Advantages and Disadvantages of GSS

Group support systems are becoming more popular because of the frameworks' capability to improve group benefits and interfaces. Group support systems offer a plausible and engaging option to the customary face-to-face conferences, and the management finds them beneficial because, without a proper communication approach deployed, conferences may return zero results and only turn out to be a waste of time (Aiken et al., 1995). Group support systems include several benefits and drawbacks. Figure 1 indicates the advantages and disadvantages of GSS.

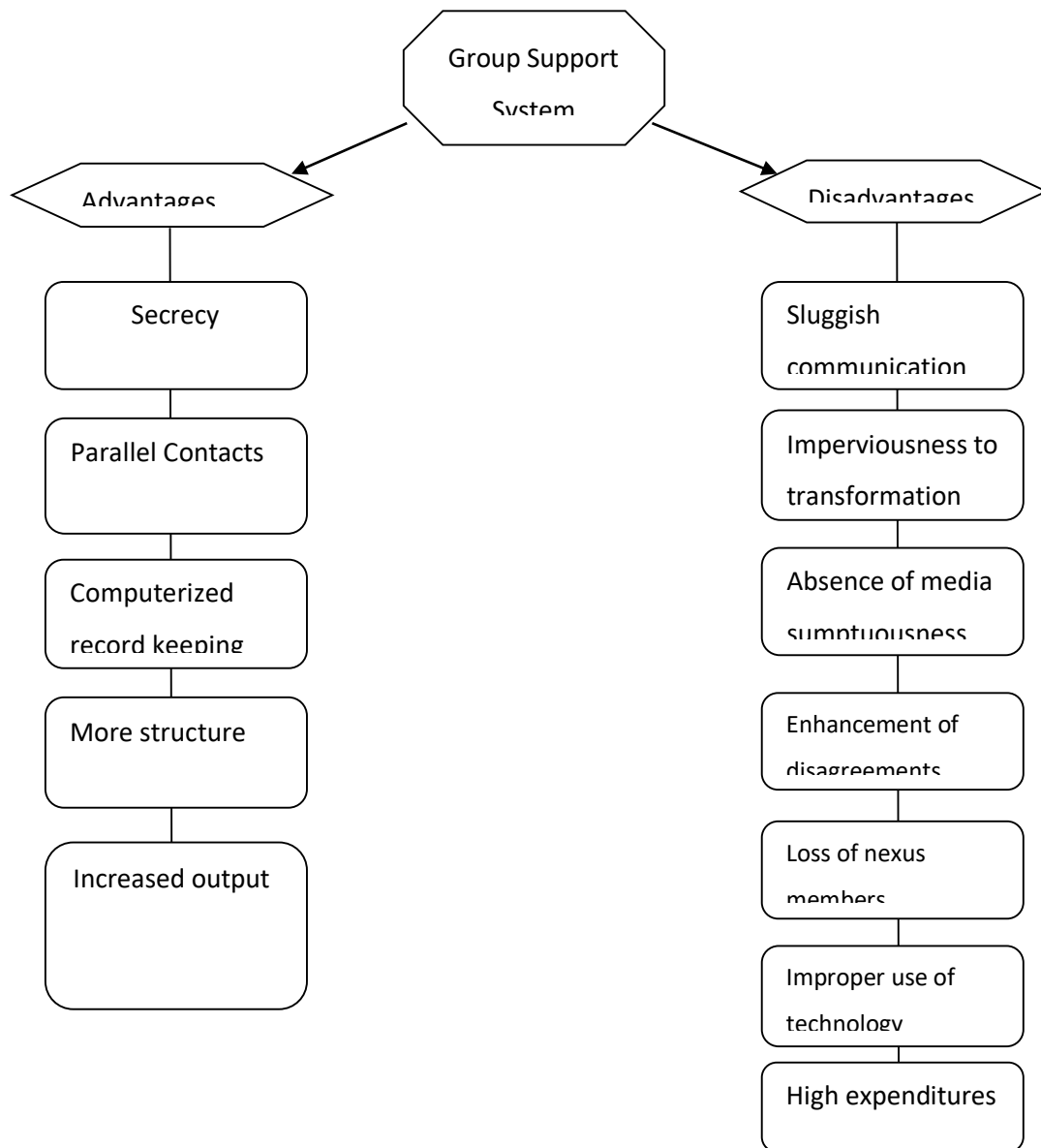


Figure 1. Advantages and disadvantages of GSS (Aiken et al., 1995). Reprinted with permission.

Advantages

The advantages of GSS include secrecy, parallel contacts, computerized record keeping, a improved and more detailed structure, and an increased output (Vreede & Brujin, 1999). Secrecy permits the anonymous sharing of thoughts, which in turn boosts the level of confidence among people to participate in the process (Aiken et al., 1995). Because of this provision of secrecy, the members of the team are not afraid of mockery by other team members. Another advantage is

that the team members can share their opinions without being afraid of a reproachful attitude of the manager, who may disagree with the statements voiced during the meeting. More than 80% of mistakes that included secrecy were about thought creation, and GSS secrecy empowers the support of the team members in the presentation of unpredictable thoughts (Pissarra & Jesuino, 2005).

In face-to-face gatherings, individuals should listen to what others talk and often do not have time to ponder; however, a GSS permits everybody to express their opinion simultaneously (Dennis et al., 2008). In conventional gatherings, each individual has just a couple of minutes to express thoughts, whereas GSS permit communication throughout the conference. There is an augmented partaking, which makes the conference is more stimulating and encouraging. Because the team members can use their thoughts in an unexpected approach which is crucial because each individual has his or her own level of intelligence and can generate new thoughts (Aiken et al., 1995).

With the GDR, there is a significant savings of time. Unlike in traditional meetings that involve losing considerable time giving everyone limited time to participate, GSS save time (Franz, 2012) by welcoming all incoming contributions at the same time by the central computer because the entire GDR is based upon an interconnected computer network (Stair & Reynolds, 2013). Participants present the collected answers for brainstorming altogether, and evaluating the best solution (Power, 2007).

A GSS immediately records remarks, voting status, and other important data given by a group. As there is an automatic record-keeping facility in GSS, the obtained records are automatically transferred into an e-file (Aiken et al., 1995). The advantage of this kind of facility is that the team members or the managers need not carry hard copies of the records whenever

and wherever required. In other words, they do not have to keep mental track of the proceedings (Kool et al., 2012). In conventional aggregation settings, members frequently neglect to understand the narration of the speaker or may be unable to process the information rapidly enough to contribute efficiently (Aiken et al., 1995).

More composition and concentration is necessary in a conference, which makes it difficult for the members to stray from the topic or problem. Group support systems minimize the distractions between teams that are working toward a common aim of completing a particular venture or assignment (Agres et al., 2005), which helps in avoiding rushed and imperfect assessments. This system also ensures more output because the meeting concentrates only on a particular problem, and as such, the time consumed is less due to fewer or no deviations. Leaders at IBM were able to halve the time consumed in meetings, and leaders at Boeing were able to decrease the total time consumed in various meetings by 90% (Aiken et al., 1995).

Anonymity also counts as an advantage. Contributions made during meetings were traditionally open, and everyone knew who made which statements. This situation was restrictive, as some people would not share their ideas because they were afraid others would perceive them as irrational or inapplicable (Nunamaker et al., 2013). Anonymous participants might give *raw* suggestions because they do not have to filter any factors for fear of others perceiving them as vulgar, a whistleblower, or indiscreet. As such, the chances of sharing more information or collecting better ideas are higher with the GSS platform.

Disadvantages

Although there are certain advantages of GSS, there are also certain disadvantages. Disadvantages consist of sluggish communication, imperviousness to transformation, absence of media sumptuousness, enhancement of disagreements, loss of nexus members, improper use of

technology, and high expenditures (Elfvengreen, 2009; Hayen et al., 2007; Huber, 1980).

Another disadvantage of GSS as portrayed by GDR is that collective thinking is usually a trap under several situations. For instance, when a complex matter arises in which no specific, definite solution is likely, GSS is likely will offer the easiest solution. In the event that the GDR systems collect the resulting contributions and the average shows that the easy option is the best solution, then it means the solution was not the best, which presents a limitation of collective thinking: that management might propose the wrong answer (Power, 2007).

Individuals have distinctive studying styles, some taking ideas or strategies at a relatively sluggish speed compared to others. Certain individuals cannot match their typing speeds with their verbal communication. Others may have insignificant keyboard abilities. Even though this particular disadvantage is gradually diminishing, it is still a hindrance during some meetings (Kerr & Hiltz, 1982). It is always advisable to employ a GSS for meetings of bigger magnitude. When the group consists of more than eight members, the point of interest of analogous correspondence has a tendency to overshadow the detriments of constrained keyboarding abilities (Wigert et al., 2012).

Anonymity may be a limitation as well. It becomes harder to tell whether a person behind a workstation (in the GDR) is active during a session or not. Although this may not be a problem as the meeting may proceed in that person's absence, it means that time and resource wastage is more likely to occur (Nunamaker, Romano, & Briggs, 2013). Anonymity may create a potential channel for irrelevant contributions during meetings. This means that because privacy is a part of this GSS system, a contributor may post irrelevant information that might be misleading in decision making.

People are usually resistant to transformation, particularly pertaining to technology. Individuals regularly feel threatened by workstations and feel debilitated when interacting with new individuals (Dennis et al., 2008). Employing a GSS involves preparing to use the programming, and some individuals may be reluctant to study how to use the framework. Managers at higher posts, who might not be workstation proficient, are more likely to have a predisposition against using the system and prefer to use the conventional system (Aiken et al., 1995).

The GSS security greatly depends on hard copies of information, and subsequently different types of correspondence are diminishing. In conventional conferences, nonverbal communication and facial statements can help other team members have an idea about the reaction of any particular comment (Parker, 2008). Team members always favor face-to-face correspondence, and as such, the GSS can make conferences unfriendly and only related to the concerning problem (Ready et al., 2004).

Disagreements could increase because of obscurity in the conference, because the comments of certain individuals might be critical. Members might abuse the system because the remarks are secret, and one member could submit different remarks complying with different members, who might make it, appear that more individuals concur with a remark when they might be incorrect (Spiro, 2010). Individuals, who want to control a verbal gathering, might have less interest in contributing to a GSS because they are unable to use their verbal aptitude (Aiken et al., 1995). Introverted members are more likely to take an interest in the system, and this inclination augments their participation (Spiro, 2010).

One of the main issues with GSS programming devices is the expense, which can range from \$15,000 to \$50,000, especially for GSS intended for use in a decision-room background

(Kim, 2006). The substantial amount of money involved might not be cost effective until and unless organizational leaders adopt the GSS on a regular basis. Specifically crafted GSS cabins at the University of Mississippi cost \$250,000. A smaller version of such a cabin could cost approximately \$90,000 (Aiken et al., 1995). Nonetheless, further improvements and upgrades in freely accessible e-collaborations have made numerous GSS aspects easy to access that involve no expenses or negligible expenses (Pearlman & Gates, 2010).

Understanding the Gaps between Technology and Social Environment

The rapid integration of technological support in social environments has provided a new framework for operating within a business organization. The development of GSS requires the acquisition of new skills, experiences, and competencies among the employees that influence the effectiveness of their performance (Hardin et al., 2014). Virtual teams do not allow the teams to negotiating in a real environment, except for a few issues. The employees communicating in a virtual space can be less encouraged to participate to achieve trustful and motivated relationships (Eweje et al., 2012). The gap can affect further advancement of IT-enabled group support and management negatively. An analysis of research studies might help to understand the problem (Dennis et al., 2008).

The emergence of a digital community is not a novel issue, as the adoption of the first technology-based models of collaboration dates back to the second half of the 20th century (Dumeresque, 2013). Short (2012) introduced studies, in which the focus was on the development and acquisition of new, alternative skills that expand experience in communicating at various levels. Group support system technology substitutes a social context for brainstorming, problem solving, negotiation, and communication by means of an electronic environment (Chen & Kyaw-Phyo, 2012). The assumption that a virtual environment can create communication gaps

is false. Rather, Chen and Kyaw-Phyo noted that “The main objective of GDSS is to enhance the process of the group decision-making by eliminating communication barriers, offering techniques for alternative’s decision analysis” (p. 32). At this point, GSS technology advances at an information-processing dimension that largely depends on such characteristics as place, time, and synchronicity.

Collaborating technology and group decision making are vital for culturally diverse settings. To integrate this environment, employees must have new tools and skills for collaboration (Hoffman et al., 2011). However, the above mentioned challenges have provided a number of limitations to integrating and developing IT-enabled communities in the workplace. To eliminate this gap, Kolfshoten et al. (2012) advised considering two types of support, technology support and process support, both of which involve design tasks, application tasks, and management tasks. These three dimensions rely on associated roles and responsibilities imposed on the members of a business organization. Kolfshoten et al. (2012) introduced a framework for collaboration and technology-based support that indicated group members should focus on such roles as development, application, and management of design administration. The framework should include a process designer, or a collaboration engineer, whose primary responsibility is designing a set of strategies for the meeting process.

Process application is another dimension needed for collaborative activities. Its facilitator provides instructions for monitoring the group members and assisting them in achieving the established objectives. At this stage, the facilitator should take responsibility for preparing and operating the corresponding software, including the technical tools for assembling the meeting facilities. The e-collaborative tools and on human resources involvement in the collaborative process should be the focus of the management process. The reviewed research studies indicated

that it was necessary to create an alternative setting, in which employees can improve their communication and develop new skills replacing and improving traditional means of group interaction to fill the gap between technology and social environments. A specific framework proposed for this solution refers to design, application, and management, which should engage third parties to ensure successful communication and fruitful outcomes.

Organizational leaders around the world are employing GSS. The leaders choose the GSS because it decreases traveling costs, increases the effectiveness of decision making, and creates a working atmosphere, where ideas occur quickly and the air of innovation surrounds the work process (Bose, 2003). Organizational leaders prefer GSS that are economical, are adaptable, and can reconcile with their current information system (Bose, 2003). Numerous aspects of computer-aided interactions influence the output of organizations pertaining to team attempts, and a specific mention of e-coordination is eminent.

The main aim of the GSS is to improve the effectiveness of group collaboration by expediting the distribution of data between the team members (Goh & Wasko, 2010). Personal Computer-interceded communication needs social habitations and influences the discernment and understanding of the significance of messages shared, which makes the sharing of data around scattered teams somewhat troublesome (Kim, 2006). Because of the promptness of communication and the absence of enough socio-zealous signs displayed in computer-intervened communication, in contrast to face-to-face meetings, the time required for coming to conclusions increases. Moreover, there is a disagreement between members concerning results, i.e., the failure to reach any conclusion within the stipulated time (Andres, 2002). The inefficiency of PC-intervened communication to transfer the socio-zealous matter in messages incites lower fulfillment with the issue comprehending procedure (Andres, 2002).

Numerous collaborative tools are accessible with a wide array of characteristics and costs. Various GSS are available in the global market, including Netscape's Collabra Share, Novell's Groupwise, Microsoft's Exchange and Group Systems (Siau, 2004). Business groups and people should identify their actual need and budget before opting for any GSS. These options incorporate team underpinning for a standard Web client and could connect to additional individual uses such as family picture collections and family tree learning. Organizational leaders have a wide array of choices for supporting group collaborations with PC-interceded devices for additional successful team actions and communications (Dennis et al., 2008).

Group support systems are favorable to business conglomerations, scholastic conglomerations, and other people. They are gaining acceptance as a viable PC-based interaction instrument. Cooperation and decisions made by teams are critical steps made inside associations and promoted in scholastic settings (Bessiere et al., 2009). Teams that are geographically scattered can interact as though they are at the same place. Conglomerations that have these frameworks have fewer travel expenses and improved output. Innovations and enhanced characteristics will lure leaders of conglomerations who do not use GSS networks so they can learn the advantages of this system. As conglomerations have global competition, GSS expedite correspondence (Schouten et al., 2010). This is a successful use of GSS.

Participants of GSS at the DHHQ have indicated electronic meetings are much easier and more enjoyable. In comparison to traditional meetings, electronic meetings enable brainstorming, voting, defining concepts, and collectively evaluating ideas according to categorized methods. The Internet and general IT are the basis of GSS platforms, and as such, they extend beyond the intra-organization bracket. Through supporting technologies such as videoconferencing, international or inter-organizational communication is possible.

Videoconferencing at the DHHQ is currently enabled using the Adobe Connect Online tool, which makes it possible to communicate virtually within and beyond videoconferencing. The tool records virtual meetings and stores them in a content library. This videoconferencing tool is also suitable for inter-organization trainings. Other features of the GSS that the DHHQ staff members enjoy include security compliance and enhanced security control.

Virtual communication and videoconferencing technologies such as Webinar and videoconferencing hosts Sysco Tandberg Systems enable videoconferencing. These GSS technologies are similar in concept but differ in their areas of application. The Adobe Connect Online technologies have features that most of these other technologies lack. When combined, these factors make meetings simpler, cheaper, more effective, and better in terms of support and decision making (Jennex, 2012).

The scholarly environment sometimes has scholars partaking in team ventures and identified communication. Alternatives are available to meet these cooperation ventures. They may be directed through message, inside a course administration framework, or with other considerably accessible economical instruments (Choi et al., 2010). The instrument that provides unsurpassed support is superior. In this way, scholars face numerous identical options in selecting the synthesized characteristics that best furnish collaboration for a specific learning atmosphere. Since the pattern of a ceaselessly growing GSS instrument is tried and tested in this research, several upgrades in the innovation have eradicated the hindrances to e-cooperation. The true test concerns finding the way to use innovations such as GSS most effectively (Schouten et al., 2010; Wigert et al., 2012).

Sametime, WebDemo, Microsoft NetMeeting, eRoom, GroupSystems, and WebEx are some of the collaborative tools on the market that support the use of GSS (Hayen et al., 2007).

These programming devices offer numerous characteristics and advantages that may be convenient to a conglomeration, depending upon its needs. The e-collaboration feature is accessible to any Web consumer through websites such as Google (Google, 2013), Microsoft Network (Microsoft, 2013a), and Yahoo (Yahoo, 2013). The ensuing paragraphs contain a description of some of the advantages of a few major collaborative tools.

Group Systems

Group systems offer conceptualizing purposes and are essential in scenarios where obscurity, positioning, and voting are important. Group systems allow all members to think and express themselves outside the standard face-to-face environments and permit everyone to participate in inventive or issuing explained targets instead of a mere couple of features. GroupSystems give structure and incorporate secrecy when needed. Leaders of conglomerations using GSS programming have saved almost half to three fourths of expenditures and time compared to those using traditional face-to-face meetings. GroupSystems has some features that make using GSS easy. These features are not available in many other collaborative tools.

Microsoft's Net Meeting

Microsoft provides teleconferencing or videoconferencing through the Internet with advanced security features (Hayen et al., 2007). The encryption of information is important because it enhances the security of computer systems that store information securely (Microsoft, 2013a). Sound and movie upgrades permit members to view other individuals and exchange thoughts in the course of discussions. According to Microsoft (2013a), the Whiteboard is important because it promotes teamwork among members. Organizational members use valid and accurate data and carry out remote conversations with others in various remote regions.

Groove

Groove is a GSS program that Microsoft offers to its clients. The program facilitates the convening of meetings and ventures and keeps a record of all the details pertaining to them (Microsoft, 2013b). Important pieces of qualified information such as statistics, records, messages, conferences, and forms are stored together in one place for everybody in the group to view. Allies inside and outside the conglomerates might be united, and team members can know the virtual area or online vicinity of other team members, which facilitates discussions and coordinated efforts (Microsoft, 2013b). Everyone can work with the same informative content if they are on the Web, logged off, or on a low frequency connection. Virtual teams cut across national, organizational, and functional boundaries, often resulting in enhanced diversity rates (Paul et al., 2004).

Google's Groups and Docs and Spreadsheets

Google's services expedite GSS e-coordinated efforts for regular Internet clients, because this tool is free. In Groups, users develop a discussion board where other users can post their ideas. Clients post their comments, read others' comments, and enter into a discussion board if required. It is possible to make a discussion group open to all or limited to certain people. In an open group, anyone can participate in the discussion and post comments. In a closed group, only the requested people have the authority to read and post comments. As diverse categories exist with several groups, they reflect the complexity of the discussions. With Docs and Spreadsheets, clients have an improved work area for their e-coordinated effort. Clients can upload files or other documents so that people in the group can see the files and documents and make any amendments. People can make amendments to files and other documents only if both the person who has uploaded the file or document and the person who wants to make the change are online at the same time. This means the involved parties can share the file or document concurrently.

This e-coordinated effort takes place without a Web program. Google's Groups and Docs and Spreadsheets are examples of GSS tools that are accessible from anywhere via the Internet.

Managers standardized GSS that give e-coordinated efforts in the last decade. This system is not accessible to only bigger conglomerates. It is easily accessible and extensively used by normal Web associated independent people as well. This has also energized the development of GSS e-coordinated efforts throughout organizations and the community. If an organizational member does not use a GSS with any group-related functions in the workplace or school setting, the group's coordinated efforts may need reevaluating (Google, 2013).

Interaction between Computer-Based and Social Environments

The success of GSS integration depends largely on psychological and cultural factors. Technology acceptance and recognition is a step toward a successful penetration in the e-collaborative dimension (Bakker et al., 2011). Specific emphasis should be on the theory of acceptance and task closure theory that provide key tools for the gradual acquisition of necessary knowledge, experience, and skills (Owens et al., 2011).

Brown et al. (2010) noted that researchers have paid attention to technology acceptance as the starting point for developing mature GSS. The concept of maturity implies the presence of models and frameworks that are employable in a decision-making process. The technology acceptance model involves defining "specific classes of technologies that capture the nuances of the class of technologies and/or business processes" (Brown et al., 2010, p. 2). A set of theories constructs the technology acceptance model, including social presence theory and task closure theory. According to the task closure theory, social presence and recipient availability constitute the key underpinnings for choosing a communication medium. The model also implies that the qualities presented above are significant for selecting a specialized tool for interaction because

individuals express the need to bring closure to message sequences. Choosing an appropriate communication device allows people to feel that they can efficiently achieve results while negotiating.

Aside from developing virtual collaboration, the basic function of GSS lies in creating a social construction of meaning. Using task closure theory, Chou and Min (2009) focused on the influence of the media environment and group members on the relationship among breadth and depth of information sharing. Chou and Min (2009) also adhered to the idea that “task closure theory is appropriate for explaining why a low social presence medium (such as electronic information sharing) paradoxically leads to high performance when dealing with fuzzy task” (p. 428). Successful knowledge management and corporate software support system that facilitate strategic decision making and enhance the competitiveness of an organization are the primary basis of technology acceptance (Kimble et al., 2010).

Within the context of knowledge management, GSS can serve as consultation systems that employ artificial intelligence techniques to organize knowledge and make it available for decision-making frameworks. Trivedi and Sharma (2012) represented GSS in a larger conceptual framework, along with software support systems and the technology acceptance model to emphasize their significance for an organization. Trivedi and Sharma noted that a successful implementation of GSS is possible through the consideration of psychological factors that make individuals accept various types of GSS.

The awareness of previous models of support systems, as well as technology frameworks for adopting these systems, is another means for the successful integration of IT-enabled technological environments. Group support systems cannot exist separately from the dimensions such as information sharing and exchange, knowledge management, and human factors (Koan,

2011). More importantly, GSS should correlate with other technology models such as software support systems, decision support systems (DSS), and technology acceptance model (Richey et al., 2012). The task closure theory is also indispensable to sustaining GSS and creating a new social construct within an organization (Short, 2012).

Adaptive Structuration Theory

Another important theoretical aspect to consider in the study of GSS is the adaptive structuration theory. The theory developed from the hypothesis that group organization is a function of social and task-based practices (Naik & Kim, 2010). Because analyzing GDSS involves focusing on the way, in which groups use them, the analysis of GSS-based decision making also occurs within these contexts. Analyzing the influence of GSS on decision making can involve identifying the systems that conform to GSS technology. These systems include guidelines that groups can apply for structuring (Ghiyoung, 2014). While testable GSS-based decision making could be relevant, it is important to analyze the different structures to discern GSS-based decision making.

In their research, Gupta and Bostrom (2013) differentiated between aspects of technological systems. Gupta and Bostrom identified life, which referred to the overall objectives and approaches that the system endorses (egalitarian decision systems), and the specifics, which referred to the systematic integration of structures into the organizational core (unidentified contribution of concepts). These GSS-based decision-making procedures are usually compatible but frequently seem to oppose one another. Decision-making systems that are GSS based have features based on the structuration theory. Structuration is a system development and redevelopment method based on users' conformity to rules and application of available resources (Darshana & Gable, 2010).

A major aspect of the theory of adaptive structuration is group interaction since different social interactive procedures re-create the applicable structural system (Jollean & Clinton, 2011). Any relative factor that influences member collaboration (such as organized creativity, task features, and deadlines) may affect GSS-based decision making. In-depth analysis of group activities helps to identify the appropriate application of GSS in decision making. The focus on the ways, in which these groups employ and re-create technical and social systems, will result in a clear understanding of the most effective approach for GSS-based decision making (Jollean & Clinton, 2011).

It is possible to investigate appropriation from small group collaborations at a particular instance when the GSS decision systems involved span long periods and when they concern organizational and societal technology values (Kang et al., 2012). Kang et al. (2012) offered a viewpoint on GSS-based decision making whereby both social elements and technology influence the group results, but only via influence on the structuring processes of the members. The focus of most research studies on adaptive structuration theory is on the ways, in which social elements and technology influence group appropriation procedures. Jollean and Clinton (2011) explained social and technology GSS-based decision making was less appropriate for conflict management when compared to groups not exposed to the examined GSS-based decision-making procedure (Kang et al., 2012).

Other research studies have identified variations in the effectiveness of conflict management between GSS-based and manual decision-making procedures. Since individuals react differently when exposed to stimuli, it is obvious that GSS systems will influence groups differently (Kang et al., 2012). In a similar conclusion, Ghiyoung (2014) explained that individuals exposed to GSS-based decision-making procedures had a considerably higher level

of agreement than other individuals exposed to only instruction systems. Thus, adaptive structuration is a theoretical indicator of the significance of GSS-based decision-making systems for organizational productivity.

Research Questions and Variables

The main purposes of the study are (a) to define the degree of an organization's readiness to implement GSS in a traditionally structured environment; (b) to assess whether the application of GSS will be a factor in preventing the negative effects that meetings may pose to productivity; (c) to understand how GSS application will contribute to better levels of motivation, satisfaction, and communication among members of the organization. The use of GSS currently occurs in almost every field. A review of historical, current, and future trends in GSS research will highlight the relationship between GSS and the above-mentioned variables.

Historical Current and Gaps Overview of GSS Systems

Decision making remains the most significant element in management (Schacter et al., 2011). Literature on GSS-based decision making frequently relates the process to the intelligent design choice paradigm. The theory includes confined rationality (which insinuates that, although it is possible to achieve a rational process of decision making, there are restrictions in individual intellectual processing skill under complex situations) and satisfying (indicating that even when the best decision is the goal, confined rationality and restricted evidence could lead to endorsing solutions that are considerably feasible) (Javad et al., 2014). Researchers have performed various studies on GSS-based decision making to eliminate the restrictions of fabricated complexity resolvers.

A considerable increase in processor-based computers was notable in the 1960s (Hosack et al., 2012). The major application of this form of computing in business operations was the

automation of repetitive business handling (Hosack et al., 2012). At that time, computers were massive, costly, and had different specialized requirements for effective upkeep and use (Ghrabab et al., 2014). Creating computer models was complicated. A person would require special programming knowledge to develop software that could accept data, and it was necessary for the programming to be on tape and created through a rigid set of commands (Alkhuraiji et al., 2014). It was impossible for users to make any modifications to the process without the assistance of programming professionals (Alkhuraiji et al., 2014). Implementing these changes was time consuming, as a single modification could take weeks to accomplish. Although new functionalities were achievable after such modifications, the time and complexity associated with the modifications were frustrating (Alkhuraiji et al., 2014).

The emergence of minicomputers during the 1970s resulted in an improvement in technology-based management (Hosack et al., 2012). The new computers were not as large and costly as mainframes, and they required less frequent maintenance. This made it possible for even small departments within firms to purchase computers, resulting in webbed computing systems and eventually to a group-based decision-making procedure.

As company leaders began to adopt these shared computing technologies, other aspects of computer-based systems for decision-making research emerged in literature (Hosack et al., 2012). Researchers focused more on cheap and user friendly systems than they did on monotonous systems. These ideas were the key premise for the first research, where DSS were separate from organizational information structures, to commence (Hosack et al., 2012).

Early descriptions indicated that DSS focused on unregulated and semi-regulated issues, and information systems focused on less critical, organized issues including those backed by business handling structures. According to the existing records, GSS-based decision-making

systems still supports decisions that could initially have been unregulated and are currently better organized due to a growth in knowledge. During the 1970s, the focus on GSS-based decision making emerged from the need to improve business solutions as complex unregulated and semi-regulated management decisions; the specified ussye turned out to conceal a major focus area of studies related to information systems (Hosack et al., 2012).

Interactivity played a significant role in the development of GSS-based decision-making systems as it enabled instantaneous data analysis (Hosack et al., 2012). The introduction of this method made conflict resolution easier, as it allowed interactive troubleshooting and real-time decision making (Eisa, 2013). This process, therefore, eliminated unnecessary delays in the decision-making process successfully. It was important to integrate data into GSS-based decision-making systems because group members required tangible data to analyze and proffer solutions to the problems. Evolution in the database systems was continuous, which led to new approaches for better database management. Researchers shifted focus to investigating the best methods of integrating database systems into GSS in order to enable more tangible decision making (Hosack et al., 2012).

A review of different research studies within this period indicated that interpersonal communication was an inadvertent issue of focus for most researchers (Hosack et al., 2012). The results of the studies performed during this period showed that most GSS-based systems served to persuade or negotiate. The persuasion element of the GSS-based decision-making process used data to indicate an activity that was either advantageous or disadvantageous. The negotiation element provided the opportunity for decision makers to begin by cutting down discrepancies or misinterpretations. Although decision makers considers these functions normal, GSS-based decision-making examinations during that time were designed for aiding

management decisions and not for analyzing data (Hosack et al., 2012). Users understood the opportunities availed by the presence of data and harnessed these opportunities to suit their requirements.

It is, therefore, possible to conclude that the presence of communication and interactive technology was a result of GSS-based decision making, which was useful for managers facing ambiguous issues. Research studies on GSS-based decision making combined technological advancement via database models and interactive technology with respect to ambiguity problems. Researchers of GSS during the 1980s integrated both technological development and an increased knowledge of decision making. New hardware and software (such as the IBM PC and electronic spreadsheets) enabled interactive decision making even among group members without programming skills. Researchers examined the internal processes used for developing decision-making models. At this point, researchers focused on GSS. While the integration of these systems was advantageous, it allowed all users to come up with potential solutions to the problem at hand, which resulted in conflicts during corporate meetings. There was a need for researchers to focus on possible ways of regulating GSS-based decision-making procedures.

Historical research studies on GSS-based decision-making procedures principally focused on assisting decision makers by offering computer-based aid during conventional corporate gatherings (Ghrabab et al., 2014). The evolution of technology eliminated the need for participants to be in the same location during meetings, as videoconferencing technology emerged. Various researchers investigated the influence of IT on GSS-based decision-making procedures (Hosack et al., 2012). Researchers also focused on the group procedure, investigating variables, including leadership styles, and employee satisfaction (Ghrabab et al., 2014). Intranet technologies also emerged during the same period as microcomputers started evolving, which led

to another technological development and improvement in the knowledge of effective group decision making.

Group support systems and GDSS are two phenomena that are challenging to differentiate between. Linden (2014) referred to GDSS as GSS; however, GSS include other variables such as design, interaction, intervention, dialoguing, and a range of responsibilities required for effective decision making within groups (Turban et al., 2011). Tow et al. (2010) linked the progress of individual to GSS, which resulted in developing a system based on negotiation. The outcome of the investigation indicated that executive ISs were a result of GDSS and triggered the creation of data storage and Internet-based investigative processes, data sourcing, including organizational intelligence systems.

The outcomes of DSS are not always successful, despite their application since 1970. Most of these letdowns are the result of inadequate planning, communication, and execution (Hosack et al., 2012). Although these systems should aid the decision-making process, the ability of management to make informed decisions will also have an influence on DSS success or failure. Thus, GSS-based decision-making processes characterized by incompetent analysts will not be successful.

Poorly implemented DSS may also lead to economic instability (Kolfshoten et al., 2012). The crash of the stock market in the 1980s was the result of computerized systems that used the index as an indicator for trade automation (Yahia et al., 2014). To address the issue, computerized systems were permitted to control the trades and failed to place limitations on these systems or allow for human control.

The evolution of GSS-based decision-making processes, in line with IT, is obvious from this historical review. These systems not only enabled but. also restricted human activities

(Kolfshoten et al., 2012). Technology only permits people to perform possible gestures, which means that it was not feasible to develop GSS-based decision-making processes when people could not easily communicate with computer systems (Kolfshoten et al., 2012).). Moreover, it was impossible for IT systems to support groups without the availability of network systems as well. With the continuous expansion and development of technology, it is obvious that opportunities for GSS-based decision making will be continually increasing.

Present and Future Trends in GSS Research

The evolution process has seen DSS shift from a merely technological viewpoint to one that integrates data and knowledge (O’Leary, 2014). Apart from recognizing the importance of data and knowledge in any system, it is important to understand their application. Different researchers have offered models that integrate DSS concepts beyond technological considerations (Pommeranz et al., 2012; Wongsuphasawat et al., 2012).

There is a plethora of research studies on GSS, and trying to identify each study will be complicated. Researchers have mostly investigated the significance of applying GSS in poorly organized decision-making procedures. Current technology is more efficient and accurate than historical technology, and there has been a notable increase in data availability. According to Kolfshoten et al. (2012), the abundance of data means that organizational leaders must ensure fast decision making by responding to all evidence available, which makes it necessary for research to continue investigating the best ways to manage data for decision making.

Research studies on information systems since 1980s evolved through six paths, namely, through inter-organizational system study, information systems tactics, online software, information systems thematic studies, qualitative technique studies, and, most significantly from the viewpoint of the proposed study, GSS studies (Dillon et al., 2010). It is important to consider

the potential trends in the area of GSS-based decision-making research studies. The integration of innovative approaches to data management might define future trends.

Knowledge Management Decision Support Systems (KMDSS) and Data Storage

The research streams of knowledge management decision support systems (KMDSS) and data warehousing are likely to merge, and the focus will incorporate better ways to allow organizational members to interact with available information, wherever and whenever it is available. Researchers of future studies are likely to focus on how KMDSS and data storage will integrate, and future studies will seek to include improved methods to facilitate remote interactions between group members in real time. Arnott and Pervan (2014) noted that the emergence of DSS has improved business intelligence in organizations, which means that DSS have become an indispensable aspect of modern organizations.

The dynamic aspects of DSS have turned them into versatile tools that are applicable in diverse organizations. This trend is under way because a growth in decision-making complexity and information accessibility will result in the need to align data systems that are logically based with technologies that support the decision-making process. The specified trend is about to be implemented and will supposedly be used by organizations such as Google and Amazon, presumably being about to improve their income through customer services that leverage data to help clients make logical decisions.

Integrating KMDSS with data storage is an indication of organizational leaders' intention to focus on customer satisfaction. It used to take years to develop and integrate database storage systems with business operations. Current applications allow businesses to gather knowledge in a matter of seconds. This customer-based perception of organizational decision making closely relates to the application of social networks and the way, in which they influence individual

decisions. People now consider the number of likes and followers a product has on Facebook and Twitter, respectively, before deciding on whether to purchase the product. Mobile systems also influence the decision of consumers regarding a product or service. Some companies provide consumers with a mobile shopping experience to enable them to perform reviews of substitute products. Data storing and KMDSS will always be a major area of research. Considering the majority of the research in this area will be related to technology, it will be possible to examine improved processes for data recovery, categorization, or operation; classification; and other procedural inventions to increase the optimal operation of storage systems and the collaboration of the latter with other systems, including KMDSS.

Social-Media-Based Group Support Systems

The application of social media for GSS is another potential trend is. It will be important to consider social media separately seeing that it has a range of exceptional features and potential to be a major subject of investigation in the nearest future. Social media is more of a behavioral system than a technical one. The aforementioned element of technology goes beyond regular GSS, as it encompasses an analysis of business requirements through socially defined subjects such as music trends. Organization might make business decisions based on users' reactions to ideas communicated via social media. By creating posts that attract users' reactions, the management may decide on the feasibility of employing a particular strategy or releasing a product or service into the market.

Although the social media system is regarded as a behavioral factor, it is not merely a leisure activity. Through diverse social media platforms, firms may understand consumer needs. Apart from being less expensive than direct consumer surveys, users' views through social media are more honest and direct (Jollean & Clinton, 2011). Leaders of business organizations are

beginning to understand the significance of social-media-based decision-making systems, which has resulted in the increased integration of social media applications in business decision processes (Scott, 2011). More researchers also focus on the relationships between different demographics and social-media-based advertising (Taylor et al., 2011). The outcomes of these research studies indicated that the acceptance of social media systems as a means of advertising for most demographics is expanding. Future researchers might discuss the potentials and restrictions of social-media-based decision-making systems.

In the GDR, for instance, researchers can create models depending on their nature and whether it is a simulation, a optimization, or a financial one. In their construction, researchers provide and apply limited data as a guide to the systems' functioning, which means analyzing data (contributions) is easier and is specific to the basic model. Researchers can assess financial data individually and filter any unrelated contribution during the automated evaluation process (Han & Kamber, 2012). The result is, therefore, more accurate, it saves time, and is more efficient in decision making.

Trust is another important aspect of research in the area of social-media-based decision-making systems. Researchers have focused on investigating how trust influences the outcomes of Information Systems use (Hsu & Chang, 2014; Rose & Schlichter, 2013). The findings from initial research studies focusing on trust and informational systems might not be applicable to social media systems. Social media users rarely restrict their information to contacts (Chai et al., 2012). To ensure effective social-media-based decision making, future researchers might focus on identifying the variables that influence trust.

It is also important to consider the significance of the virtual environment when analyzing social media systems. Leaders of business organizations might use the gaming Web

environment to identify the skills of possible recruits (Hosack et al., 2012). These virtual systems are popular, but their ability to predict the potential of participants might be questionable. Future researchers might also focus on the relationship between virtual environment user profiles and the traits and abilities of the actual users. Researchers might also investigate the best way to attract individuals to virtual environments. Research indicated the importance of inclusion and accessibility for the promotion of supportive, integrative behavior among users (Porter et al., 2011).

Mobile Technology and GSS

Mobile technology is another prospective trend in GSS research. This aspect of research is technical and integrates initial literature on GSS-based decision-making models. Through mobile technology, users may communicate with available structures, notwithstanding the user or structure location (Perez et al., 2010). Mobile technology is gaining popularity and its incorporation into user systems is increasing (Perez, Wikström, Mezei, Carlsson, Anaya, & Herrera-Viedma, 2013; Perez, Wikström, Mezei, Carlsson, & Herrera-Viedma, 2013). The systems provided by mobile technologies motivate the evolution of conventional GSS decision-making procedures (Perez et al., 2010). The improved characteristics of these systems, coupled with constant accessible support, create considerable technological benefits for organizational decisions. Through mobile technology, the management of an organization may easily access live feeds and monitor or enhance collected information, which may be a part of the decision-making process (Perez, Wikström, Mezei, Carlsson, & Herrera-Viedma, 2013).

It is important to consider the different complications characteristic to mobile technologies. Although mobile systems are available, designing systems that link users to the technology may be challenging (Perez et al., 2010), which makes it obvious that future

researchers will focus on understanding the best way of approaching the ever-changing technology. Herskovic et al. (2011) performed a study to create a system dedicated to organizing combined systems specifically developed for mobile technology. The resulting design produced a system that overcame complexity and autocratic organization characteristics to non-mobile technologies.

Group Support Systems and Value Creation in a Business Organization

The efficiency of GSS lies in their relevant adjustment to business and employees' needs. The computer-supported environment should also conform to the values, mission, and ethnic standards of an organization (Trivedi & Sharma, 2012). The premise of the synergy of GSS frameworks and corporate culture can include a number of issues and rationales.

Systems thinking is often viewed as opposite to the individual decision making, but this scheme is not consistent with the actual objectives of GSS and their contribution to value creation (Webne-Behrman, 1998). Ackermann et al. (2010) contended that the introduction of computer-based interactive systems add greater value to group management. Various software devices create the link between traditional meetings and proposed virtual settings. Schouten et al. (2010) noted that the main advantage of GSS lies in better awareness of problems compared to individual thinking. A technology-supported group has more data at its disposal than separate members coordinating with each other. Developing a collective system is possible through GSS only, which presents a new value for the relationships within an organization. Group support systems are less likely to fail because all processes and activities take place in coordination, but not at an individual level (Trivedi & Sharma, 2012).

Resourced-based capabilities that information technologies introduce also enhance the significance of GSS for a business organization. In particular, a range of IT resources creates a

competitive advantage and, therefore, provides value to business activities. Ramamani (2010) noted that “Information systems researchers have applied the resource-based view to suggest that some firms view IT assets as key resources and exploit it to leverage competitive advantage” (p. 12). Combining various techniques and resources within a GSS is beneficial for enhancing the value and mission of an organization. Pertinent interaction between organizational routines and software use ensures the success of the technology-enhanced support (Paul et al., 2004).

Electronic meetings using GSS integrate decision-support strategies, computer (information) technologies, and communication in creating efficiency. The idea of this three-in-one model is to aid in coming up with solutions to unstructured organizational problems in group settings (Kock, 2013). Group support systems generally have three major advantages above the traditional (oral) methods of hosting meetings. The absence of order in expressing opinions is first advantage, as it promotes parallel communication and facilitates an efficient exchange with ideas. The absence of necessity to take turns means that ideas or contributions can occur simultaneously and be available for all members to discuss. The second advantage is anonymity. The nature of electronic meetings held over GSS, which allows for anonymity, means that participants can make more open and unlimited contributions. The team members can also reveal better and unexplored ideas. The final unique asset of GSS-based meetings that overshadows traditional oral meetings is that data capturing and storing occurs automatically. This system involves taking less time, saving resources, and eliminating the tediousness of manually executing such tasks (Yearwood & Stranieri, 2012).

With regard to the above-presented findings, a decision-making process in an organization is more congruent with group thinking. Researchers have also indicated that successful implementation of GSS can significantly improve the quality and efficiency of group

decision making through reducing the negative effects of collective problem solving and increasing the advantages of group collaboration (Andres, 2010). Within a GSS setting, the possibility to manipulate visual aids, individual-based incentives, group size, communication mode, types of software tools, leadership roles, and incentives can enhance the quality of solutions significantly (Woltmann, 2009).

GSS and Efficient Leadership

A significant gap exists between the development of GSS and leadership in a virtual space (Huang et al., 2010). Organizations should modify traditional leadership strategies to adapt to a new business setting and take control of the employees' engagement into a technology-based environment. Although the emergence of virtual world communication has become a common issue in a global environment, there is a major shortage of pertinent resources and tools that could integrate these new skills and experiences into. Virtual worlds can become the means of collaboration and communication as soon as managers and employees are able to manipulate digital devices representing their objectives (Goh & Wasko, 2010).

Leadership is an important condition for fostering GSS into traditional collaborative teams. Boughzala et al. (2012) noted that "Interpersonal and leadership dynamics in team collaboration are different than the real world" (p. 723). Since the members of e-meetings appear as avatars, they cannot use nonverbal communication as a tool for rendering and receiving. Facilitators can face difficulties in understanding the members' perceptions and responses to collaborative processes. The IT environment also creates challenges for facilitators to control participants and ensure successful coordination, which can result in conflicts and miscommunication. The concerns are even more serious with regard to underestimating facilitators' charismatic character in a virtual world. Leadership in a virtual world is another

important aspect that researchers have insufficiently examined in research literature. To solve this problem, Boughzala et al. (2012) suggested improving leadership-team performance in case a leader substitute framework ensures a team's collaboration context, including task orientation, environment, and performance. Under these circumstances, management will not prioritize the importance of leadership.

As soon as management removes leadership frameworks, management should create an alternative environment that should be as efficient as its former substitute. Trust, cooperation, and mutual agreement are among the main underpinnings for establishing GSS. Charles (2010) proposed a fresh and interesting approach to solving this problem through engaging virtual members in a game. Charles (2010) noted that "The nature of play is fundamentally distinct from work.... When we play, there may be a goal, but the goal is by no means the ends" (p. 23). The aim of playing is often reduced to entertainment and encouragement of participants to compete, interact, and communicate, with no pressure imposed on them. An approach based on games can become a remarkable solution to acting in a virtual environment.

Leadership Traits in Group Support Systems

Good leadership has the ability to elucidate the way to the objective, diminishing deterrents that avert the members from arriving at these objectives and augment the group's fulfillment in accomplishing the objective (Kim, 2006). Leaders are capable of creating and upholding the connection between fulfillment and output of the group by using diverse authority styles for which the complexity of the errand could direct the viability (Kim, 2006). The leader must have the capacity to acclimate to distinctive programs and exercises and to test issues from diverse points of view while having authority over the available technology (Ready et al., 2004). Another point of contention is that the interactive teams might have a tendency to perform badly

as individuals are likely to pledge their output to the people, who are at the bottom in giving output (Pissarra & Jesuino, 2005). It is a common knowledge that team members will not perform well simply due to the presence of a leader. Leaders must have good leadership qualities, perform better to set a good example and become role models (Kim, 2006).

To keep the efforts of the masses concentrated in one direction (i.e., achieving the goal), an efficient leadership approach is necessary. Without a leader, the efforts of the employees will be scattered and the motive will not be achieved (Kim, 2006). An efficient leader will instill motivation in the employees, making sure that they will work as a team, and team efforts seldom fail. Efficient leaders can have a great impact on the employees. Organizations should employ leaders, who have the competence to motivate employees and lead them to follow business ethics. Spiro (2010) noted that “Even if senior management and employees embrace a code of ethics, someone needs to be put in charge of applying and updating it” (Spiro, 2010, para. 7).

Kim (2006) discovered teams that had a leader reported a larger amount of fulfillment with the decision process than teams that had no leader. Kim also discovered that parallel correspondence mode teams reported a more elevated amount of fulfillment with the decision process than the corresponding teams without one. Even the lowest ranked and no-expense e-cooperation instruments, where a leader sets up the meeting area and welcomes team members, tend to have this prospective drawback.

A portion of collaborative tools puts stress on the actions pertaining to decision making. These GSS, like the group systems, incorporate practical characteristics to underpin the methodologies fundamental to achieving an imparted team decision concerning a business issue or chance. Business administrators offer collaborative tools for offering informative content. These GSS, for example Google Groups, provide backup situations for e-cooperation with discussion

teams and archive the details, but without the characteristics similar to those of standings and voting on options (Google, 2013).

Employees are adapting quickly to the team correspondence atmosphere with the rise of innovations, where a large portion of the e-coordinated effort devices are accessible at minimal cost (Mattison, 2011). This augmentation of innovation permits aggregate members to view one another and show feelings when using motion picture conferencing, sound, and content visits. These members have the capacity to appropriate a portion of the same profits that teams get when they participate in face-to-face conferences (Matsatsinis et al., 2005).

Leaders of conglomerations are extensively using the electronic medium to conduct meetings to augment the performance. In light of the fact that efficient leadership is the main criterion for the success of a group venture, it becomes imperative to analyze how the conduct and approach of leaders affect the teams using electronic systems for conferences. To ascertain this aspect, Kahai et al., (2006) showed that (a) participants made more strong comments under a consultative manifestation of participative initiative than under commanding leadership; (b) participants proposed more results and made fewer discriminating comments for a decently organized issue than for a tolerably organized issue; (c) participative initiative was more helpful to the proposal of results for a reasonably organized issue, whereas authoritative leadership was more helpful for an equitably organized issue; and (d) frequency of result suggestions in turn influenced the group output and fulfillment.

While writing on any specific feature, innovation, or technology, it is important to view both the positive and the negative sides. Having considered all the positive aspects of the GSS, it is crucial to discuss the negative ones as well. Negative feedback regarding the GSS is minimal. Rather, researchers have pointed to the necessity to address the leadership issue. In one case, the

GSS failed due to the oversight and incompetence of the leadership (Parent & Gallupe, 2001). An experiment conducted to ascertain the effect of GSS on meeting results showed that “facilitated groups experienced improved group processes and greater cohesion, whereas the GSS supported groups did not” (Anson et al., 1995, pp. 189-208). The results of the experiment showed that the group helped by a facilitator showed better results than the group supported by the GSS.

Summary

The historical review of GSS-based decision-making procedures highlighted various related studies and identified present collaboration possibilities and potential GSS trends. The review indicated a considerable increase in the importance of GSS-based decision-making processes. The diversification of research on DSS resulted in numerous related research studies. With research studies expanding to include specific subjects such as KMDSS and data storing, the purpose of GSS may be unclear. After additional review, researchers might refine the studies in this specific topic to the structures that support some types of GSS.

The importance of GSS shows continuous expansion in related research studies. It is, therefore, important to expand the current GSS models to integrate potential areas including social media, Internet-based software that aids customer choices, and mobile technology that offer instant information management. Such potential aspects of DSS indicate the growing popularity of GSS in individual and business systems.

The increasing GSS research subjects provide an opportunity for information system related researches to concentrate on specific areas of interest and subsequently integrate the outcomes of individual studies to develop general GSS features. Considering the diverse potential decisions faced by individuals and organizations, the research possibilities focusing on

identifying the relationship between human and technical systems is enormous. Also with the importance of flexible decision making within organizations in mind, research related to GSS may encompass both technical and social subjects.

The need to make decisions in different research areas is also obvious. It is constantly necessary to integrate conventional information system methods to GSS-based decision processes. The necessity for this integration also positions the area of information systems as a base field and highlights the importance of an information systems research alliance beyond the area. The significance of the model does not relate solely to researchers concerned with GSS. All researchers interested in improving the decision making may consider the different classes to concentrate on the intricacies of technical, social, and behavioral support systems.

Managers may use this research approach to increase their knowledge of the complicated features of organizational decisions and to distribute resources to offer support that enables effective decisions. It is important for GSS research studies to constantly progress owing to the continuous viability of GSS, but it is essential to consider the history of the subject and the significance of previous research informing the modernization of GSS. This review contained an exclusive multigenerational perspective developed to inspire new information systems research and advancement and to highlight the significance of historical research in relation to imminent uses. These theories might allow employees to accept the novelties and adjust to a rapidly changing setting. Value creation in a technologically savvy setting increases performance and creates a competitive advantage over other organizations. The reviewed literature contained strong support for the methodology and research design selected to answer the research questions. Chapter 3 includes a discussion of the research method and design selected to help address the problem under study.

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