How Information Sharing in Groups Changes with Passage of Time: A Transactive Memory Perspective

Arvind Shatdal and Neharika Vohra

Abstract

Information sharing among group members is critical for group and organizational success. A transactive memory perspective is used to understand and explain how the nature of information sharing can change with passage of time. Findings of information sharing research are discussed in the light of transactive memory theory. The paper proposes that nature of information sharing in group changes with passage of time as the transactive memory system develops.

Keywords: information sharing, transactive memory system, group

1. Introduction

Information sharing in groups has been an issue of concern for researchers for a long time. Research has been conducted in various directions over the years with focus on two domains. The first domain focuses on why the information is shared or not shared among members of a group and its nature and extent. Research in the second domain has considered how this information sharing can be enhanced to serve the purposes of the group and the organization in which it is embedded.

There is very little research on how the nature of information sharing can change in a group over a period of time. This consideration is significant because groups are formed within an organization on a more permanent basis. These groups develop transactive memory system (TMS) with passage of time. There is a need to consider that how this TMS affects information sharing in groups over a period of time. This paper provides a Transactive Memory theory based explanation that how passage of time may increase the information sharing in groups.

2. Information Sharing Groups

The general expectation is that when a group undertakes a task more minds at work would lead to a better solution. This expectation of better solution is based on the assumption that when people meet they would combine their information/knowledge. This enhanced pool of information/knowledge would help in finding a better solution than one achieved with the knowledge or expertise of any one member working as an individual. The performance of cross-functional teams, task forces, and other type of groups that are brought together, whose purpose is to learn through interaction, relies on the liberal exchange of unique or diverse information that was not previously known by all group members (Argote, Gruenfeld, and Naquin, 2000).

Research on information sharing in groups is multifaceted and includes common information sampling (Stasser and Titus, 1985; Larson Jr., Foster-Fishman, & Keys, 1994; Larson Jr., Christensen, Abbot, & Franz, 1996; Winquist & Larson, 1998; Wittenbaum, 1998), common knowledge effect (Gigone and Hastie, 1993), structuring of discussion (Stasser, Taylor, & Hanna, 1989, Greitenmeyer, Schulz-Hardt, Brodbeck, & Frey, 2006), temporal pattern of discussed information (Larson Jr., et al. 1994), issue of minority dissent (Nemeth and Wachtler, 1983; Nemeth and Kwan, 1987; Brodbeck, Kerschreiter, Mojzisch, Frey, & Schulz-Hardt, 2002; Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006), nature of instructions provided (van Ginken and van Knippenberg, 2008), mutual enhancement and validation (Wittenbaum, Hubble and Zuckerman, 1999; Wittenbaum and Bowman, 2004) and mode of communication (McLeod, Baron, Marti, and Yoon, 1997; Shirani, 2006). In addition, how various issues confronted by group influence information sharing among group

members have also been examined, some of these include nature of problem (Laughlin & Adamopoulos, 1980; Laughlin & Shippy, 1983), solving the hidden profiles (Stasser and Stewart, 1992; Fraidin, 2004), availability of choices (Parks & Cowlin, 1995; Hollingshead, 1996), availability of time (Karau and Kelly, 1992; Parks and Cowlin, 1995; Kelly and Karau, 1999), information/ cognitive load (Stasser and Titus, 1987; Fraidin, 2004) etc. This domain of research has also considered nature of membership in the group as unfamiliar/diverse (Gruenfeld, Mannix, Williams and Neale, 1996; Chernyshenko, Miner, Baumann and Sniezek, 2003) as expert (Stasser, Stewart & Wittenbaum, 1995; Stewart & Stasser, 1995).

3. Transactive Memory Theory

Transactive memory is a shared system for encoding, storing, and retrieving information (Wegner, 1986, Wegner, Erber and Raymond, 1991). Wegner (1986) introduced the concept of transactive memory systems as a way to understand how couples coordinate to solve information problems. He defined the TMS as a combination of the knowledge possessed by each individual and a collective awareness of who knows what. He argued that this system provides individuals with access to a level of knowledge that no one member could hope to remember.

Wegner (1986:191) states that "TMS in a group involves the operation of the memory systems of the individuals and the processes of communication that occur within the group. Transactive memory is therefore not traceable to any of the individuals alone, nor can it be found somewhere "between" individuals. Rather, it is a property of a group. This unique quality of transactive memory brings with it the realization that we are speaking of a constructed system, a group operation that is built over time by its individual constituents." It can be said that transactive memory derives from individuals to form a group level information-processing system, which in turn may influence its individual participants.

Wegner (1986) while explaining the construction of a working transactive memory in a group says that we notice and learn about the characteristics of others around us and in the process also start expecting them to possess certain kind of knowledge. When this group is called upon to remember something, information is channeled through experts. When no such known expert is member of the group, the individual who was allocated with the responsibility of storing information by circumstance holds on to it, allowing the group to access when it is required (Wegner, 1986). Following the argument this can be stated that transactive memory is built because individuals in a group either accept or are assigned responsibility for knowledge.

Wegner, Erber and Raymond (1991) discuss that individual memory systems can become involved in larger, organized social memory systems that have emergent group mind properties not traceable to individuals. Research has shown that TMS emerge with passage of time (Lewis, 2004). Austin (2003) found that task and external TMS positively influence group goal attainment, external group evaluation and internal group evaluation in permanent organizational groups. Further, research has shown that task interdependence, cooperative goal interdependence and support for innovation are positively related to work group's TMS which in turn is related to group's performance (Zhang, Hempel, Han, & Tjosvold, 2007).

4. Transactive Memory Theory and Information Sharing in Groups

4.1 Transactive Memory and Common Information Sampling

Several studies conducted over the last two decades indicate that usually unique information is not shared by group members. Research has established that during discussions, groups often focus on the common information for decision making purposes (Stasser and Titus, 1985, 1987; Larson Jr., Foster-Fishman, & Keys, 1994; Larson Jr., Christensen, Abbot, & Franz, 1996; Winquist & Larson, 1998; Wittenbaum, 1998, 2000; Brodbeck, Kerschreiter, Mojzisch, Frey, & Schulz-Hardt, 2002), rather than unique information held by individuals in the group. These studies have considered information sharing in groups at a point of time. Since the work of Stasser and Titus (1985) several researchers have tried to explain the phenomena around why groups

focus on shared information during discussions. Stasser and Titus (1985), following Shiflett's (1979) argument asserted that it is a simple mathematical probability that a piece of information residing with greater number of people within a group will have a higher probability of getting expressed during a discussion.

When a group works together for a period of time, one can expect that pool of information that is known to all would increase. Some of the expert knowledge that was initially unique to one in the group would be known to all or at least few members of the group. It is widely documented that social outsiders who possess unique information experience intense and often unpleasant social pressure (Nemeth, 1986). Therefore, the knowledge of who knows what would reduce the social pressure to conform to other group members when members know that other members in the group have knowledge of his/her carrying unique information of certain domain.

Development of TMS is a result of group members working together for a period of time. During this time they engage in discussions where information is received, exchanged, shared among the members in order to encode, store or retrieve it for meeting the group objectives. Therefore even if we begin with the premise group discussion utilize information which is common to all, it is highly likely that after such interaction some unique information would be pooled and become common to all or few group members and discussed as and when the need would arise.

Proposition 1. TMS will evolve with growing pool of expert knowledge among various group members. This in turn would lead to increased information sharing in groups over time.

4.2 Transactive Memory and Nature of Hidden Profile Formation

It has been found that whenever confronted with a situation where all members don't have access to full information relevant for taking the best decision; groups rely on limited shared information rather than unique information held by each individual. This often leads to suboptimal decisions (Stasser and Stewart, 1992). Stasser (1988, as cited in Stasser and Stewart, 1992) described this pattern of unshared information in a group as a hidden profile. "In a hidden profile, a superior decision alternative exists but its superiority is hidden from individual group members because they have partial access to information that supports this superior alternative" (Stasser and Stewart, 1992, p. 426). Exclusive focus on shared information runs the risk of overlooking hidden profiles (Wittenbaum and Stasser, 1996). It has also been shown that pooling of unshared information leads to better quality decisions (Larson, Jr., Christensen, Franz, & Abbott, 1998).

Fraidin (2004) argues that hidden profile itself could be of two different kinds. In a "connected hidden profile," each group member possesses unshared bits of information whose meaning is dependent on other unshared items held by other group members. In contrast, in a "disconnected hidden profile," each group member possesses unshared bits of information whose meaning is not dependent on unshared items held by other group members (Fraidin, 2004). It is claimed that connected hidden profiles bring more information to fore when the nature of task is interdependent (Fraidin, 2004).

It is important to note that when a group would start to work together, in the process of transactive memory formation, connected hidden profile would be formed. The members are going to share information and its encoding with different members of the group would lead to formation of a connected hidden profile. Safely assuming that task pursued by the group would be of interdependent nature, it will lead to increased information sharing.

Proposition 2: Interdependent tasks would encourage group members to form or discover their connected hidden profiles and this would lead to a robust TMS. Such TMS would help in increased information sharing among group members over time.

4.3 Transactive Memory and Expertise Establishment over Expertise Perception

Libby, Trotman, and Zimmer (1987) claim that work groups perform better when their members have

knowledge about the spread of expertise within group. Studies that have focused on nature of membership have shown that explicit and mutual recognition of expertise increases the amount of unshared information mentioned during discussion (Stasser, Stewart & Wittenbaum, 1995; Stewart & Stasser, 1995).

When a group comes together, usually members get to know who comes with what kind of educational background and work experience in the group. This gives way to recognition of that specific member in certain light, but this recognition is tentative. In the process of development of TMS the perceived expertise of group members is established on the basis of first hand experience. It can be expected that information would readily flow in the group from expert sources once their expertise is established. It must also be recognized that other group members can also bring new information to the group in future that falls in the domain of one specific member.

Proposition 3: Expertise of group members is established not only on the basis of their backgrounds but also over repeated interactions. This knowledge of spread of expertise in group would lead to a TMS, which in turn lead to better information sharing in groups over time.

4.4 Transactive Memory and Information/Cognitive Load

Stasser and Titus (1987) found that gains in recall of information would not be shared under low information load and especially when it remained predominantly unshared before discussion. Fraidin (2004) found the effect of cognitive load on decision accuracy was mediated by participants' ability to identify connections between interdependent pieces of information. Cognitive load impaired the decision of those dyads in which both members were given all the task information, as compared to those dyads in which the task information was divided between the members. Fraidin (2004) argued that this happened probably because dividing the information meant that each member had a smaller amount of information to learn in the limited amount of time allowed. Dividing task information helped groups manage the cognitive load.

In a TMS, the group members learn to do an intelligent and need based distribution of information to accomplish the group task. This system of distribution gains more concrete shape as the TMS evolves with passage of time. Thus encoding, storage and retrieval of information will keep improving with evolving TMS which would lead to reduction in the information/cognitive load on individual group members and help in increased information sharing.

Proposition 4: The cognitive load on the group gets divided over time in a more efficient way with evolving TMS which in turn leads to better information sharing among group members.

4.5 Transactive Memory and Bringing Structure to a Discussion

Several researchers have focused on finding ways to decrease biased information sharing. Bringing structure into the discussion has lead to more information sharing to happen (Stasser, Taylor, & Hanna, 1989, Greitenmeyer, Schulz-Hardt, Brodbeck, & Frey, 2006). Stasser et al. (1989) found that structuring the discussion by dividing it into two parts, where the first part was focused on recalling and reviewing all the important information related to choice, and second part was devoted to reaching a decision about the best choice, lead to increased information sharing. This may be because of repetition of shared information. Using advocacy (as a method of structuring discussions) of a particular choice led to increase in sharing of both common and unique information held by group members (Greitemeyer et al., 2006).

With passage of time groups not only learn who knows what but also how the group works together which becomes part of the developing TMS. Therefore, one can say that with passage of time, as the TMS develops discussions also get more structured and help in increased information sharing.

Proposition 5: Over time the groups evolve a structure to review, recall and process information as required which becomes part of the developing TMS. This TMS helps groups to have superior information sharing over time.

5. Discussion

The findings of research on information sharing, when considered from the viewpoint of TMS, explain the phenomena in a different light. First and foremost, the development of TMS is indicative of the fact that a group has existed for some time. It is argued that TMS as it develops would change the way information was being shared in the group over time. Further, emergence of TMS is not a one time but evolving process, therefore, it would keep influencing information sharing among group members.

The arguments developed by combining the conceptualization of transactive memory with findings of research in group information sharing research show that nature of information sharing among group members would change and improve with passage of time. It is argued that TMS enhances the common pool of information among members of the group resulting in more information sharing. In addition, the way group encodes information would give way to development of connected hidden profiles which in turn would promote more information sharing. Further, as the knowledge about domain expertise of different group members is established information sharing would increase among group members. As the research suggests, establishing the expertise would lead to more information sharing from the member and they would no longer feel the need to conform like a social outsider. Another desirable consequence of TMS would result in structuring the discussions with established expertise and norms followed by the group for encoding, storage and retrieval of any new information within the group, and will eventually lead to increased information sharing.

6. Conclusion

Understanding of information sharing in groups has led researchers down several different paths. This paper attempts to enhance this understanding by looking at the issue from the perspective of transactive memory. On the basis of arguments this can be safely proposed that information sharing would increase among group members with passage of time as the transactive memory system would develop.

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Arvind Shatdal is a faculty in OB & HRM area at Indian Institute of Management Indore.

Neharika Vohra is a Professor in Organizational Behaviour area at Indian Institute of Management, Ahmedabad. Her academic and research interests include leadership and gender issues in organizations; management across cultures; and leadership in educational institutions. Her recent publications include papers in *Science, American Psychologist, Journal of Personality and Social Psychology, Journal of Cross-Cultural Psychology, Management Decision*. She has been on the editorial board of several international and national journals.