

The application of transactive memory in the learning organization and the role of credibility



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ABSTRACT

Studies have shown that transactive memory plays a significant role in how learning occurs within organizations. While many studies have looked at what influences the growth of transactive memory, not much research has been done on how the thought processes of people working in groups are formed. This area of study examines the importance of how knowledge is organized in people's minds at work for the growth of transactive memory and how this process is affected by individual characteristics. Therefore, this study aims to fill this gap by looking at how trust and skill, known as credibility dimensions, affect the growth of transactive memory. For this purpose, information was gathered from 239 people working at a paint and coating company in Saudi Arabia. The results indicate that both trust and skill significantly influence the development of transactive memory.

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1. Introduction

The development of the learning organization concept was influenced by the transition from a manufacturing-focused era, characterized by physically demanding tasks, to a period where cognitive tasks like decision-making, planning, and problem-solving predominate. Consequently, the basis of competition among organizations shifted from the utilization of physical assets and market dominance to the strategic use of knowledge and expertise. This change underscores the growing importance of intellectual resources and continuous learning in today's organizational dynamics (Collins and Smith, 2006; Malik and Garg, 2020). This has enabled organizations to innovate and compete, as it gives them an edge over their competitors. A learning organization uses individuals' learning to increase the organization's capabilities, as by the dissemination of knowledge among individuals through the sharing of expertise, the organization can create its intangible asset. In fact, the advent of learning organizations stretches back for more than three decades, since the 1990s, with extensive research conducted to illustrate how a learning organization is structured and how it functions.

Researchers from different disciplines have addressed the concept of the learning organization from different perspectives. For example, researchers from the field of psychology have focused on the function of learning, while others from social psychology have explored individuals' attitudes toward the learning organization, and researchers from the management field have investigated the impact of the organizational culture on the learning organization.

Moreover, management researchers consider the sharing and storing of knowledge as the core characteristics of a learning organization, as the practice of knowledge sharing is viewed as a mechanism the organization relies on to move the knowledge from the individual level to the organizational level through individuals' learning. To that end, researchers have employed the theory of transactive memory as a system to understand how learning occurs through retrieving and sharing work-related knowledge in the workplace (Littlepage et al., 2008). Transactive memory is about how, prior to expertise sharing, individuals go through a process of seeking, identifying, and locating the expertise they consider essential to their performance. These processes are deemed important to the development of the cognitive structure of expertise in the organization. In fact, the crucial issue in the development of transactive memory lies beneath the socio-cognitive processes of the division of experts in the organization. This is because knowledge domains are categorized based on assigning individuals to different specialties,

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which involves the judgment of others as reliable sources of knowledge. However, previous research has not explored the role of credibility in the development of the social-cognitive structure of experts. Thus, this study aims to address this issue by seeking to identify the factors that affect the development of transactive memory.

2. Literature review

2.1. Learning organization

The notion of learning organization is primarily attributed to Senge (1990), who considered the turning point in the research into learning organizations (Jamali and Sidani, 2008). Rifkin and Fulop (1997) indicated that it shed light on managers' attempts to introduce learning at work because it proposes new approaches for managers to handle power, diversity, and indeterminacy as they reflect on the issues of teams, culture, and leadership. Senge (1990) illustrated how individual learning and collective learning can give the organization a competitive advantage. He introduced five basic principles, called the "five disciplines": "system thinking, personal mastery, mental models, shared vision, and team learning" (Senge, 1990). The idea revolves around the identification of those aspects of organizational settings that help to develop a supportive learning environment. It represents the move to the development and the growth of the organization through the transformation of individuals' knowledge into organizational knowledge (Burgoyne, 1995; Yang, 2010). This change relies on the exchange of knowledge during interactions between people by organizing learning activities that connect those who need knowledge (recipients) with those who have it (sources), facilitating the spread of knowledge (Hollingshead and Fraidin, 2003).

In learning organization research, most of the studies treat the learning organization as a metaphor to understand how individuals learn. For example, some studies explored the relationship between the various features of a learning organization, such as leadership and work engagement (Park et al., 2014), job satisfaction (Lim, 2010; Malik et al., 2011), leader-member exchange (Joo and Ready, 2012; Joo et al., 2014) and organizational commitment (Joo and Park, 2010; Lau et al., 2017; Wang and Yang, 2007). Other studies have explored the impact of change (Blackman and Henderson, 2005), strategy (Thomas and Allen, 2006), and structure on the learning process (Santa and Nurcan, 2016). Furthermore, other studies have investigated a learning organization's relationship with the environment (Garvin et al., 2008) and the outcome of that relationship, such as better alignment (Thomas and Allen, 2006), empowerment (Clegg et al., 2005), and the systematic view of the organization (James, 2003). In fact, knowledge sharing in the learning process is not a linear process, as tacit knowledge is embedded in individuals; consequently, it is not

easily transferred due to factors pertaining to individuals (Chinowsky and Carrillo, 2007). This means that learning is not a random process (Inkpen, 1998), as it is necessary to identify what "goes on between individuals not just think of the learning as a property of the person" (Pedler, 1995).

In fact, the process of learning in the learning organization is seen as a dynamic process based on individuals' interactions that imply the movement of knowledge from individuals into their groups in the organization, whereas the identification of individual knowledge is formed through direct observation, interaction consequently a reference from other individuals. This, in turn, supports the development of the cognitive structure of experts' location in the organization. Locating valuable expertise in the organization contributes to the effectiveness of learning by minimizing the time and effort of learners (Poleacovschi and Javernick-Will, 2020). In fact, as indicated in several works, locating expertise relies on shared cognition, such as social representation (Moscovici, 2001), shared reality (Hardin and Higgins, 1996), group problem-solving (Larson and Christensen, 1993), and transactive memory (Moreland, 1999). This is because the process of learning in a learning organization relies solely on the coordination of distributed knowledge and activities in the organization. Hecker (2012) indicated that the cognitive structure of knowledge in the organization can be efficiently facilitated by transactive memory

2.2. Transactive memory

Transactive memory, in short, refers to how individuals participate in collaborative work in their organization (Poleacovschi and Javernick-Will, 2020). Wegner's (1987) definition of transactive memory includes both the integration of individuals' knowledge and the recognition of other individuals' knowledge. The focus of this research is on the second part of Wegner's (1987) definition, concerning how workers develop an awareness of others' specialties, locate those others, and use that information to access experts' knowledge whenever they need to. The transactive memory system is characterized by its function at the interpersonal, group, and team levels, as it enables individuals to evaluate the quality, value, relevance, and accessibility of the knowledge possessed by others (Peltokorpi and Hood, 2019). In fact, it develops the cognitive division of individuals that is based on assigning experts to different domains of knowledge based on their expertise. Hence, accepting different knowledge domains and an awareness of shared expertise allows individuals to support each other by assigning tasks and directing new inquiries to the respective members (Peltokorpi and Hood, 2019). Therefore, individuals become interdependent on each other, as each individual outcome is linked to another individual action (Brandon and Hollingshead, 2004). Thus, cognitive interdependence is considered a core component of

the transactive memory system, as it plays a crucial role in the process of individuals' reliance on each other's knowledge. The studies of transactive memory have expanded into different disciplines, embracing several themes and topics. However, according to [Singh and Mirzaeifar \(2020\)](#), the factors discussed in the literature are grouped under broad categories, such as the antecedents, components, and consequences of transactive memory. The antecedents of transactive memory are a group of factors required to facilitate the formation of transactive memory; the component factors are the determinants of transactive memory composition, such as knowledge stock; and the consequences include the factors that are influenced by the development of transactive memory. This categorization, in fact, reflects the input-process-output framework of a team's effectiveness ([Mathieu et al., 2008](#)). Because team members are the significant entities in transactive memory, the antecedent factors are deemed important, as they include individuals' characteristics that enable or constrain their interaction ([Mathieu et al., 2008](#)). Previous studies that have investigated the impact of antecedent factors have found that whether dyads split the responsibilities for learning, remembering, and conveying various components of the task depended on task incentives to retain different rather than comparable information ([Hollingshead, 2001](#)). Other researchers have explored the impact of team member familiarity ([Lewis, 2004](#); [Akgün et al., 2005](#)), team member assertiveness and stress ([Ellis, 2006](#)), training ([Moreland and Myaskovsky, 2000](#); [Prichard and Ashleigh, 2007](#)), environmental stressors ([Pearsall et al., 2009](#)), and role identification behavior ([Pearsall et al., 2010](#)).

Despite the plethora of research, knowledge about the antecedent factors that drive team members to memorize and process knowledge remains incipient ([Cotta and Salvador, 2020](#)). This has been especially noticeable in relation to the structure of the transactive memory system in contrast to the transactive processes, which involve the encoding, storing, and retrieving of team members' knowledge. [Lewis \(2004\)](#) described these processes as a system that helps team members know each other's specialties. He noted that by splitting knowledge responsibilities, members can focus on learning deeply in their own areas. This allows them to spend less time looking for needed information when doing tasks. As a result, team members can plan and coordinate better when they understand how their skills and actions connect. Over time, the development of a team's shared memory depends on the team's mental framework and human factors, which influence this process. Thus, the main goal of this research is to identify these human factors and examine their impact on the development of shared memory. However, [Lewis \(2003\)](#) illustrated that inferences about the existence of a transactive memory system can be made from individuals' specialization, credibility, and coordination. Specialization is the core of the

system, and it refers to the recognition of individuals' specialized knowledge among other individuals. Credibility refers to the extent to which group members trust each other's knowledge, and coordination refers to the ability of group members to work collectively in an efficient way with less confusion and minimum misunderstanding.

In the process of learning, credibility is found to be a necessary condition for effective learning to occur between individuals ([Davenport and Prusak, 1998](#); [Dyer and Nobeoka, 2000](#)), as it serves as an alternative to verify the value of knowledge ([McNeish and Mann, 2010](#)). This occurs because the recipient of the knowledge will not internalize the knowledge from the source unless he or she assesses the value of that knowledge ([Cummings, 2003](#)). In fact, credibility affects the recipient's beliefs, as they associate a credible source with valued knowledge. Consequently, the positive perception of the source's credibility will increase the dependence on his or her knowledge due to the benefit that the recipient expects to obtain ([Takahashi and Tandoc, 2016](#); [Beatty and Zahn, 1990](#)). [Hillgoss and Rieh \(2008\)](#) asserted that credibility evolves through individuals' interaction, which implies how they perceive one another. This was verified by early studies like [Wilson \(1983\)](#) and [Tan et al. \(2009\)](#), who emphasized the role of credibility in the learning process between employees in the workplace. They claimed that the role of credibility is exemplified by the impact that trust and competence have on the perception of the source and his/her knowledge. Credibility is considered a multidimensional construct composed of important factors, trust, and competence, that have control over the learning process of individuals ([Teven and Herring, 2005](#); [Little and Green, 2022](#)). Thus, it can be said that trust and competence are the critical factors that influence the development of transactive memory in the learning organization.

Trust is about how trustees and trustors attempt to structure their relationship to protect their own interests. It entails the confidence that a two-party exchange will result in an outcome that is beneficial for both sides ([Kucharska, 2017](#)). In fact, learners use a range of criteria to assess the trustworthiness of experts ([Levin et al., 2004](#)). Trust can be generated based on, first, working on the same assignment, as individuals who are close to specialists might observe how their expertise is used to produce results at work. Second, when parties have close ties, they will be more likely to work together for their mutual advantage. Third, individuals assume persons in higher positions are highly competent based on their meeting the job requirements. Hence, if the source is trustworthy, this will influence the behavioral change of the recipient and so affect the exchange of knowledge ([Tsai and Ghoshal, 1998](#)). The source, in order to be influential (be trusted), needs to exhibit a high level of expertise in a specific domain; accordingly, he/she will be perceived as trustworthy ([Smith and Flores, 2014](#)). Subsequently, the recipient, perceiving that

the source is trustworthy, will be more dependent on the source's expertise (Szulanski et al., 2004). This shows the impact that trust has on both key constituents of the transactive memory, namely, the network of knowledge and the processes of encoding and retrieving individuals' expertise. Based on that, trust can be considered to serve as an antecedent factor in the development of transactive memory. This will lead to the following hypothesis:

H1: Trust has a significant influence on the development of transactive memory in the organization.

On the other hand, competence refers to personal attributes that are related to effective work performance and contribute to organizational success (Cardy and Selvarajan, 2006). It is defined as "others' assessments of a person's skills and abilities in fulfilling a particular role" (Kim et al., 2009). It is also described as "the ability of another party to perform as expected according to the standards connected to a task at hand" (Van Maele et al., 2014). Cardy and Selvarajan (2006) added that these personal characteristics need to be manifested in an observable manner through work. Thus, source competence is revealed through interaction with recipients, for example, in answering questions, presenting during a meeting or in training sessions, providing mentorship, and through their participation in the community of practice (Levin et al., 2004). Therefore, when a source's area of expertise is deemed useful, it is thought to be a crucial component of credibility and can affect the recipient's learning skills by extending their knowledge domain (Abrams et al., 2003; Prahalad and Bettis, 1986). On that basis, it can be argued that the recipient's willingness to learn will increase as a result of the positive perception of the expert's knowledge (Kakabadse et al., 2001), as the delineation of the source's knowledge domain will enhance the credibility of their expertise. This will allow the knowledge seeker to feel confident that the expert being sought out is knowledgeable and that their knowledge is worth sharing knowledge (Abrams et al., 2003). Consequently, faith in someone's expertise will lead the knowledge seeker to be vulnerable to the influence of the thoughts of the expert. Based on that, competency can be considered an important factor that allows the development of transactive memory. Accordingly, the following hypothesis is proposed.

H2: Competence has a significant influence on the development of transactive memory in the organization.

3. Methodology

This study investigates the impact of the credibility dimensions, namely, trust and competence, on the development of transactive memory in the learning organization. To validate the

research hypotheses, this study carried out a survey in a large organization, specifically a paint and coating manufacturer, in Saudi Arabia. The organization was selected because of its extensive efforts to prioritize individual and professional development through knowledge transfer. According to Odor (2018), a learning organization is one that encourages its members to engage in numerous processes where they individually and collectively learn by acting and reflecting together. The data were gathered through an online survey by sending the poll's hyperlink to the company's human resources manager, who then forwarded it to the employees' emails in various departments. After we received 152 responses from the first round of data collection, we sent a second email to the human resources manager urging him to send a follow-up email to remind other employees to participate. This yielded 87 more responses, meaning the total number of responses received in this study was 239. The majority of respondents were male (n=160; 68%), and the remaining 33% (n=79) of the respondents were female.

The measurement scales in this study were either adopted from previous studies that had been tested and verified or were developed for the purpose of this study. Transactive memory was measured using five items adopted from Choi et al. (2010) (e.g., 'Our team members have specialized knowledge of some aspects of our task'). The measurement of the credibility dimensions was developed based on the literature review of the existing research. Trust was measured using five items developed based on Faraj and Sproull (2000), Mayer et al. (1995), and Tschannen-Moran and Hoy (2000) (e.g., 'I believe trust among employees increases their cooperation and collaboration at work'). Competence was measured using five items developed based on McAllister (1995), Cardy and Selvarajan (2006), and Van Maele et al. (2014) (e.g., 'An employee's significant knowledge at work will make him/her identifiable among others as an expert'). All the research items were measured using a five-point Likert scale, with 1 being 'strongly disagree' and 5 being 'strongly agree.' Before administering the survey, the measurement scales were checked for validity and reliability (Table 1). First, to check the face validity, the questionnaire in its preliminary form was given to a group of employees in a similar organization to assess the clarity of the items and their correlation to their measures. After the questionnaire was cleared of any language biases, factor analysis was conducted to evaluate the construct validity for the measurement of the credibility dimensions. The results of the factor analysis endorsed the validity of the two distinct measures of credibility: trust embraces four items with a factor loading ranging from .68 to .78, and competence embraces five items ranging from .70 to .80. Second, the questionnaire was tested in a sample of 30 employees to assess the reliability. The internal consistency of the scales was assessed by using Cronbach's alpha to ensure the reliability of each

factor (Nunnally, 1975). The results indicate that Cronbach's alpha values ranged from .88 to .91 for all factors.

The results of the reliability and validity tests indicate that the questionnaire was reliable for data collection. Ethical concerns were addressed carefully in this research. The questionnaire was provided with a cover page giving information about the research topic and its aim. It also guaranteed the anonymity and confidentiality of the data and informed the participants about their right to withdraw at any time. The data collected from the research sample were used to test the relationship between the credibility dimensions and transactive memory. It was hypothesized in this research that there is a causal relationship between trust and competence with transactive memory. Regression analysis was conducted to test the research hypotheses.

4. Findings and discussion

The results of regression analysis in Table 2 demonstrate the causal relationship between the credibility dimensions and transactive memory. It was found that trust and competence have a significant impact on transactive memory. The findings show that the existence of transactive memory can be fostered by trust and competence, $F(1, 120) = 274.385, p < .001$. This demonstrates that both trust and competence are significant individual factors that underlie the existence of transactive memory. Further, $R^2 = .696$ indicates that the credibility dimensions explain 69.6% of the variation in the transactive memory. The coefficients were further calculated to ascertain the impact of each of the study's independent variables on transactive memory. The first hypothesis proposes that trust has a significant impact on the development of transactive memory, and the results confirm this ($\beta = .988, t = 16.565, P = .001$); hence, the first hypothesis is supported. The second hypothesis proposes that competence has a significant impact on the development of transactive memory. The results confirm this ($\beta = .853, t = 11.740, p = .001$), and hence, the second hypothesis is supported.

The results indicated earlier confirmed the assumption of this research that credibility has a crucial role in the establishment of transactive memory. The premise behind that is linked to the impact of its factors (trust and competence) on the growth of interpersonal relationships that result in individuals' interdependence at work. Indeed, the significance of the impact of trust in this study is in line with the findings of Szulanski et al. (2004) and Sharratt and Usoro (2003). Moreover, it is consistent with Levin et al. (2004), who demonstrated that employees in the workplace use different means to assess the trustworthiness of the source of knowledge before sharing the knowledge. Hence, the degree to which coworkers are willing to pay close attention to each other and have faith in their knowledge and behaviors is attributed to their

interpersonal trust. In fact, the existence of transactive memory is the result of employees' needing each other's cooperation to accomplish their tasks. In addition, it has been found that teams performed noticeably better when there was no interpersonal conflict (Rau, 2005). However, this is significantly effective only with employees with whom they have regular face-to-face meetings and trust in management is insignificant in the development of transactive memory (Robertson et al., 2012). Based on that, it can be said that trust, which is related to the reliability of the knowledge provided by coworkers (Jarvenpaa et al., 2004), is a fundamental element in the development of transactive memory, which, in turn, facilitates the learning among individuals in the organization.

Table 1: Reliability and validity results

Constructs (variables)	Items	Factor loading	Cronbach alpha
Transactive memory	TM 1	0.711	0.910
	TM 2	0.796	
	TM 3	0.810	
	TM 4	0.781	
	TM 5	0.853	
Trust	Trust 1	0.785	0.887
	Trust 2	0.826	
	Trust 3	0.767	
	Trust 4	0.727	
Competence	Com 1	0.729	0.884
	Com 2	0.796	
	Com 3	0.795	
	Com 4	0.809	
	Com 5	0.707	

Table 2: Results of regression analysis

Variable	Standard error	β	t	P-value
(Constant)	.399			
Trust	.060	.988	16.565	<.001
Competence	.073	.853	11.740	<.000
R ²	.696			

The findings also confirmed the research's assumption that competence has a significant role in the establishment of transactive memory. This result is consistent with earlier research by Swanson et al. (2020), Kakabadse et al. (2001), and Yeung et al. (1999). Also, it is in accord with Cardy and Selvarajan (2006), who referred to the development of the cognitive structure in the organization through the engagement of employees in surveying and evaluating targeted employees' skills and knowledge in relation to their need. This was substantiated by Hollingshead et al. (2002), who considered this process as crucial to the development of the transactive memory. Also, Gino et al. (2010) indicated that employees with well-developed transactive memory systems are more creative than their equivalents with less developed transactive memory systems. This is because employees in the process of developing transactive memory generate a visual representation of the experts in their workplace, which, in turn, will facilitate their access to the expertise and knowledge that affect their work. Thus, it can be said that competency is a prerequisite for depending on

others' expertise to perform a variety of activities and for knowing whom to contact when in need. Based on the findings in this research, we consider individuals' competency an important factor for the development of transactive memory in the organization.

The overall results of this study show the vital role of credibility in the development of transactive memory; this lies in the significant impact of its factors, trust, and competence on the preliminary evaluations of individuals' knowledge, which leads to the development of a cognitive structure of expertise in the organization. This research seeks to extend the limitations identified in the literature about how the development of transactive memory supports individuals' learning. It provides empirical evidence about the evaluation of the role of credibility in the development of transactive memory and describes the process by which credibility affects the development of transactive memory as individuals undergo a process of identifying, evaluating, and locating the experts in their workplace. Trust and competence have a major role in identifying those individuals who have a significant impact on their work by providing the knowledge that can help them accomplish their tasks successfully. Moreover, to the best of the authors' knowledge, to date, no research has been conducted that investigates the role of credibility dimensions on the development of transactive memory in a learning organization.

Transactive memory offers insights into the role of the socio-cognitive process in the learning processes between individuals. Thus, this study has important managerial implications for managers in learning organizations regarding the use of transactive memory theory as the basis for explaining how learning between individuals occurs. It suggests that managers must emphasize the role of trust and competence in individuals' interactions to facilitate learning among individuals. Trust appears to mitigate individuals' fear of exploitation, disappointment, and opportunistic behaviors. Hence, managers should promote work values that emphasize the relational aspects of individuals' cooperation, such as honesty. This, in fact, can show how individuals are forthcoming when their colleagues need help. Managers need to encourage collaboration and communication among individuals, as the frequency of communication provides rich information that enables individuals to assess each other's intentions and behaviors. On the other hand, delineating individuals' areas of expertise will highlight the knowledge domains in the organization. In this regard, individuals need to be assigned to tasks outside their units, and hence, their expertise will be recognized by other units in the organization. Also, managers can use social recognition to reward individuals' contributions, as that will inform others about their specialty.

The limitation of this study lies in the first two stages, identifying and evaluating since these stages are considered to be very important in the process of learning, as it is through them that individuals will

be able to find suitable expertise. In fact, knowledge hoarding, that is, individuals withholding their knowledge for certain considerations, can impede individuals' endeavors to develop their cognitive structure. Therefore, future research is needed to address this issue by exploring the factors that affect sources' intentions to disclose their expertise to others in the organization. There is a need to focus more specifically on the value they attach to their expertise, for example, the issue of knowledge power. As individuals can view their knowledge as the source of their value to the organization, they will think that sharing it will erode that value as what they know becomes known by others in the organization. Moreover, this research has not considered the outcomes of the development of transactive memory, such as the impact on motivation. Hence, future research should investigate how reliance on others' expertise can increase individuals' internal motivation. Knowledge sharing strengthens social relationships among individuals, which, in turn, creates a sense of in-group identification. Therefore, researchers should investigate the impact of the transactive memory system on the social aspects of group identification, such as awareness and commitment.

5. Conclusion

Being a learning organization is considered to be a source of competitive advantage to the organization, where its growth and development are attributed to its members' ability to learn. In fact, transactive memory plays a major role in the process of learning by locating individuals' specialties in different domains and facilitating the connection to the needed knowledge. At the preliminary stages of transactive memory development, individuals undergo a process of identifying, evaluating, and locating the valuable expertise in the organization to verify their usefulness and accessibility. These phases are deemed crucial to the efficiency of learning, as individuals will identify the experts who can have an impact on their performance. While most of the studies that have investigated the application of transactive memory in learning organizations have focused on learning, remembering, and communicating among individuals, these studies have not explored the underlying process of learning and the factors that affect individuals' learning. This study sheds light on the significant impact of credibility on the development of transactive memory. The findings of this study indicate that the credibility components, trust, and competence have a significant impact on the socio-cognitive processes and affect the development of the mental representation of individual experts in the organization. In fact, the role of credibility in the process of knowledge categorization that determines individuals' specialty has not been clearly addressed in previous research. Thus, this study contributes to the literature by

identifying the significant factors that have an impact on individuals' cognitive interdependence.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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