TMS in Communication Oriented Cultures

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Abstract

The paper presents a study on transactive memory systems (TMS) and individual's meta-knowledge (ImetaK) in organizational contexts, examining how communication oriented organizational culture improves the development of Imetak and TMS improving the acquisition, creation, distribution and use of knowledge. The research involved a questionaire based survey applied with 103 professionals from knowledge-intensive business services operating in Romania, and tested hypotheses about the positive effects of communication oriented organizational culture on both individual's meta-knowledge and team-level transactive memory systems. The empirical results show that an organizational culture that cultivates communication positively influences the development of meta-knowledge that employees have about their work environment and colleagues, as well the development of the transactive memory system (TMS) at the team level and the organizational level.

Keywords: *transactive memory systems, knowledge, communication, corporate culture.*

JEL classification: D80, D83, D85, D22

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1. Introduction and Literature Review

Starting with the groundbreaking work of psychologist Daniel Wegner (Wegner et al., 1985), the concept of Transactive Memory System (TMS) was introduced, defined as a shared system developed between people in a relationship that allows them to encode, store, and retrieve information from different areas of interest (Ren & Argote, 2011).

Within a group, TMS is based on an interdependent network of connections created between group individuals to organize, preserve, and utilize a diverse range of knowledge from its members, generating a "cognitive map" that facilitates the identification and rapid access to necessary information in different situations (Martin & Bachrach, 2018; Zheng & Mai, 2013).

TMS theory has often been applied at the team level in organizational studies (Anderson & Lewis, 2014) to explore how multiple minds can function as a whole through interactions and communication (Wegner et al., 1985). Thus, organizational studies have highlighted different benefits of TMS regarding task performance improvement (Liang et al., 1995), team efficiency improvement in achieving

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objectives (Austin, 2003; Lewis, 2003; Zhang et al., 2007), with TMS proving effective for various types of teams and contexts, such as product development teams (Anderson & Lewis, 2014), management teams (Rau, 2006), or consulting teams (Lewis, 2004).

Therefore, the literature (Lewis, 2003) indicated three types of behavior that manifest when a group has developed TMS: specialization, coordination, and credibility. Specialization refers to the extent to which team members possess specialized knowledge that is beneficial for teamwork. Coordination occurs when the differentiated knowledge of team members can be efficiently organized. Credibility is defined as the extent to which team members trust the reliability of other members' differentiated knowledge (Lewis, 2003). TMS equips the group with such a system to organize, distribute, retrieve, and coordinate the use of knowledge among its members (Lewis, 2003; Wegner, 1995).

While the transactive memory system (TMS) helps teams and organizations achieve superior performance (Lewis, 2003), the development of individual meta-knowledge (ImetaK) is essential for TMS development at the group level (Griffith et al., 2003; Leonardi, 2014; Leonardi, 2015; Majchrzak et al., 2004).

Individual meta-knowledge (ImetaK) has been defined as "individuals' memory containing information about the 'label and location' of information regarding what other members of a group know" (Ren & Argote 2011, p. 192). Thus, meta-knowledge determines an individual's ability to access and use information held by other people to complement their own knowledge and memories. For example, an individual can rely on a colleague who is an expert in a certain field to provide information and perspectives when needed. Thus, they rely on external information sources to complement their own knowledge and improve their performance.

The development of individual meta-knowledge (ImetaK) is essential for TMS development at the group level because it allows members efficient transfer of their subject-related knowledge (Griffith et al., 2003; Majchrzak et al., 2004). Individual meta-knowledge development is an absolutely necessary facilitator for cognitive work sharing at the group level and transactive memory system TMS development. Leonardi (2014, 2015) showed that TMS development at the organizational level is facilitated by employee meta-knowledge development, since TMS represents the cooperative division of labor for learning, remembering, sharing, and managing the team's relevant knowledge (Hollingshead, 2001; Wegner, 1987).

Employee meta-knowledge is essential for information exchange and integration, to leverage specialized expertise in organizations and thus improve performance (Austin, 2003; Leonardi, 2014; Lewis & Herndon, 2011). Employee meta-knowledge constitutes basic building blocks in the functioning of a transactive memory system TMS that supports the organization to perform at a superior level through the use and integration of expertise held by different employees who must combine and coordinate their knowledge for task completion.

Of course, individual meta-knowledge development and group-level TMS development mutually support each other. A well-developed TMS leads to improved

performance behaviors, such as efficient communication and knowledge sharing, team learning and creativity, team effectiveness and efficiency (Austin, 2003; Lewis et al., 2005; Ren & Argote, 2011).

As the literature shows (Kozak, 2013; Ouriques et al., 2018), efficient knowledge management within the organization automatically involves workforce management using information and communication technologies, as well as promoting a corporate culture that stimulates social interactions that allow people to share knowledge and freely exchange ideas.

Previous studies (Cameron & Quinn, 2011) have shown that employee trust and beliefs regarding risks and, therefore, their willingness to share information depend on the type of organizational culture. Employee willingness to share information is stimulated by an organizational culture characterized by a high level of flexibility and inhibited by an organizational culture characterized by a high level of control (Cameron & Quinn, 2011). Organizational culture reflects common values and beliefs (Deshpande & Webster, 1989), attitudes and behavioral patterns shared by organization members, being what defines appropriate conduct in various organizational contexts, being the cornerstone on which companies build their operations and cultivate relationships (Schein, 1990).

Corroborating the literature indications presented above, we can say that ImetaK and TMS development are closely linked to a culture of efficient knowledge sharing and management at the organizational level, an organizational culture in which individuals are encouraged to communicate, interact, and exchange ideas, and we formulate the following research question: What is the impact of an organizational culture that cultivates communication (V_communication) on the level of development of employee meta-knowledge (ImetaK) and on the level of development of the transactive memory system at the group level (TMS)?

2. Method and data

The study was based on quantitative empirical research that sought to answer the research question and test the following research hypotheses:

H1. An organizational culture that cultivates communication (V_communication) has a positive effect on the level of development of employee meta-knowledge (ImetaK).

H2. An organizational culture that cultivates communication (V_communication) has a positive effect on the level of development of the transactive memory system at the group level (TMS).

The research used primary data collected through an online questionnaire developed for this study and applied in 2024 using Google Forms on a convenience sample of 103 respondents (professionals working in teams in organizations operating in Romania, in knowledge-intensive services such as: information technology; research and development; professional services) recruited through author's professional networks.

Participant selection for the study was based on the criterion of belonging to the target population (professionals working in teams in organizations operating in Romania, in knowledge-intensive services) and availability to allocate approximately 10 minutes to complete the anonymous online questionnaire at the end of spring-beginning of summer 2024.

Thus, the investigated population consisted of 52 respondents working in the information technology field and 51 respondents working in research and professional services such as consulting, audit, etc., in various types of companies (multinationals operating in Romania - 46 respondents; Romanian companies - 57 respondents).

The questionnaire used for data collection was created considering the research hypotheses and using instruments recommended by the literature (Lewis, 2003; Kanawattanachai & Yoo, 2007; Sull & Sull, 2020) for measuring research variables such as: transactive memory system (TMS); individual employee meta-knowledge (ImetaK); cultivation of transparent and honest communication through organizational culture (V_communication). The questionnaire used a 5-point Likert response scale (from 1 = total disagreement to 5 = total agreement) for gathering participants ratings for all the items belonging to the constructs used to measure investigated variables (TMS; ImetaK; V_communication). The questionnaire also included socio-demographic items, professional profiling items for participants, and organizational profiling items for the organization represented by respondents.

Therefore, the items included in the questionnaire aimed to measure the investigated variables through validated and previously published instruments, as follows:

The transactive memory system TMS (Cronbach's alpha 0.799 > 0.7 threshold) was measured on a reflective scale of 15 items (5 items for TMS specialization subdimension, 5 items for TMS Credibility subdimension, 5 items for TMS Coordination subdimension) indicated by Lewis (2003).

Individual employee meta-knowledge ImetaK (Cronbach's alpha 0.895 > 0.7 threshold) was measured on a 6-item scale indicated by Kanawattanachai & Yoo (2007).

V_communication was measured on a single-item scale indicated by Sull & Sull (2020) to evaluate the extent to which the communication value is found in the set of values shared and manifested in the daily practice of the organization.

3. Results

The analysis of data collected through the questionnaire sought to explore: What is the impact of an organizational culture that cultivates communication (V_communication) on the level of development of employee meta-knowledge (ImetaK) and on the level of development of the transactive memory system at the group level (TMS)?

Statistical analysis tested hypotheses H1 and H2 starting from the assumption that an organizational culture that cultivates communication

(V_communication) improves knowledge sharing (formal and informal) within the organization, which positively influences the level of development of meta-knowledge that employees have (ImetaK), as well as the level of development of the transactive memory system at the work team and organizational level (TMS).

In analyzing the relationship between V_communication and ImetaK, respectively the relationship between V_communication and TMS, consideration was given to the manifestation in daily practice of the organizational communication value, and not just the presence of this value in the set of declared values. The research focused on evaluating the level of manifestation in daily practice of declared organizational values, following indications from studies conducted by Sull et al., (2020) and Sull & Sull (2020) which revealed problems of weak correlation between practical application of organizational values and aspirations reflected by official declarations of over 500 organizations investigated in the USA.

For data analysis, we used the SPSS statistical program.

Statistical analysis indicated the reliability of the scales used (Cronbach's alpha above the 0.7 threshold) for the 2 multi-item variables measured reflectively according to instruments provided by the literature: transactive memory system TMS (15 items of Lewis (2003); Cronbach's alpha = 0.799) and employee meta-knowledge ImetaK (6 items of Kanawattanachai & Yoo (2007); Cronbach's alpha = 0.895).

Therefore, the arithmetic mean of their respective component items was assigned to each of the multi-item variables ImetaK and TMS.

The V_communication variable used the single-item scale suggested by Sull & Sull (2020).

The inspection of descriptive statistics for the 3 variables of interest (see Table 1), was followed by three successive regression analyses in the SPSS statistical program (see Table 2, Table 3, Table 4).

Descriptive Statistics

Table 1

Variable	N	Mean	Std. Deviation
TMS	103	3,97	,518
ImetaK	103	3,76	,802
V_communication	103	3,45	1,152

Source: Author's elaboration

The first regression analysis confirmed hypothesis H1 regarding the positive effect ($\beta = 0.350$; $t = 3.755$; $p < 0.05$) of cultivating communication through organizational culture (V_communication) on ImetaK (the level of development of meta-knowledge that employees have about their work environment and colleagues), with the result indicating a statistically significant standardized beta coefficient ($\beta = 0.350$; $p < 0.05$). Table 2 reports the full result generated by the SPSS statistical program for this analysis.

Results of regression analysis: the impact of V_communication on Imetak

Table 2

Regression						
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	,350	,123	,114	,75580		
Dependent Variable: ImetaK Predictors: (Constant), V_communication						
ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8,056	1	8,056	14,103	,000[b]
	Residual	57,695	101	,571		
	Total	65,751	102			
a. Dependent Variable: ImetaK						
b. Predictors: (Constant), V_communication						
Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	2,923	,236		12,393	,000
	V_communication	,244	,065	,350	3,755	,000
a. Dependent Variable: ImetaK						

Source: Author's elaboration

The second regression analysis indicated the positive effect of cultivating communication through organizational culture (V_communication) on TMS (β = 0.506; t = 5.895; $p < 0.05$), confirming hypothesis H2. Table 3 reports the SPSS result of statistical analysis.

Results of regression analysis: the impact of V_communication on TMS

Table 3

Regression						
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	,506[a]	,256	,249	,44960		
Dependent Variable: TMS Predictors: (Constant), V_communication						
ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7,026	1	7,026	34,756	,000[b]
	Residual	20,416	101	,202		
	Total	27,442	102			
a. Dependent Variable: TMS						
b. Predictors: (Constant), V_communication						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,194	,140		22,760	,000
	V_communication	,228	,039	,506	5,895	,000
a. Dependent Variable: TMS						

Source: Author's elaboration

The third regression analysis tested the effects of both V_communication and ImetaK on TMS. Table 4 reports the result generated by the SPSS statistical program following this analysis.

Reconfirming hypothesis H2, the results indicated the significant positive effect of cultivating communication value through organizational culture on the development of transactive memory system (V_communication on TMS: $\beta = 0.362$; $t = 4.393$; $p < 0.05$).

As expected considering the literature (Leonardi, 2014; 2015), the results indicated also the significant positive effect of ImetaK on TMS ($\beta = 0.412$; $t = 5.008$; $p < 0.05$).

Results of regression analysis: the impact of V_communication and Imetak on TMS

Table 4

Regression						
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	,637[a]	,405	,393	,40401		
Dependent Variable: TMS Predictors: (Constant), ImetaK, V_communication						
ANOVAa						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11,119	2	5,560	34,061	,000[b]
	Residual	16,323	100	,163		
	Total	27,442	102			
a. Dependent Variable: TMS						
b. Predictors: (Constant), ImetaK, V_communication						
Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,415	,200		12,064	,000
	V_communication	,163	,037	,362	4,393	,000
	ImetaK	,266	,053	,412	5,008	,000
a. Dependent Variable: TMS						

Source: Author's elaboration

Therefore, the results of the statistical analysis conducted in SPSS have shown that an organizational culture that cultivates communication has high positive effects on both ImetaK and TMS, confirming the research hypotheses H1 and H2.

4. Conclusion

The empirical results of our study show that an organizational culture that cultivates communication positively influences the development of meta-knowledge that employees have about their work environment and colleagues (ImetaK), as well the development of the transactive memory system (TMS) at the team level and the organizational level.

Results of this research show that a communication oriented organizational culture has a positive effect on TMS development, confirming the deep linkage between communication and TMS indicated by Peltokorpi & Hood (2019).

Also, the positive effect of ImetaK on TMS indicated by the results drawn from the analysis of the dataset used in this research confirms literature indications (Leonardi, 2014; 2015) that TMS development at the organizational level is facilitated by the development of employees' meta-knowledge. Of course, individual meta-knowledge development and group-level TMS development mutually support each other, as literature indicates (Austin, 2003; Lewis et al., 2005; Ren & Argote, 2011): a well-developed TMS leads to improved performance behaviors, such as efficient communication and knowledge sharing, team learning and creativity, team effectiveness and efficiency.

Overall, this study has the merit of highlihting the power of communication oriented organizational cultures in developing employees' meta-knowledge and transactive memory systems, alowing a better acquisition, creation, distribution and use of knowledge, opening the way for the multiple benefits of TMS development indicated by the literature (Austin, 2003; Anderson & Lewis, 2014; Lewis, 2003; Utami et al., 2024; Zhang et al., 2007; Zhang et al., 2024) such as team efficiency, objectives achievment, innovation and improved performance.

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