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REGULAR ARTICLE

Drivers for performance in innovative research groups: The mediating role of transactive memory system

Dainelis Cabeza-Pullés*, Leopoldo J. Gutierrez-Gutierrez, F.J. Llorens-Montes

Department of Business Administration, Management, Business Management Faculty, University of Granada, Granada, Spain

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Abstract This article contributes to research on transactive memory systems (TMSs) by analyzing the relationship between trust, collective mind (CM), and network ties (NT) as antecedents of performance in innovative university research (IUR), and the mediating role of the TMS in these relationships. The conceptual model grounded in seven hypotheses is tested through structural equations modeling. The data analyzed are drawn from 257 directors Spanish university research groups. The results show that TRUST, CM, and NT are positively related to the TMS and that the TMS is positively related to IUR. The most striking result is that the TMS mediates the relationships of TRUST, CM, and NT to IUR, becoming a necessary condition for TRUST, CM, and NT to improve IUR. These results support the conclusion that managers of university research groups should promote the development of TMSs to stimulate IUR in order to make these groups more competitive.

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Introduction

Increasing innovative performance is currently a crucial element in the development of organizational productivity and competitiveness (Mattes, 2014; Fan et al., 2016; Vázquez-Urriago et al., 2016; Verdu-Jover et al., 2017; Ardito and Messeni, 2017; Serrano-Bedia et al., 2017). Seeking methods that explain this innovative performance is always beneficial, but such inquiry is especially important now that

innovation is recognized as a dynamic capability (Danneels, 2002; Verona and Ravasi, 2003; Verdu-Jover et al., 2017) and generative source of differentiation (Haaavisto, 2014; Ruiz-Jiménez and Fuentes-Fuentes, 2016; Verdu-Jover et al., 2017). Although innovation is primarily associated with private firms, innovative orientation also develops in the public sector, specifically in universities (Hewitt-Dundas, 2012; Spanos et al., 2015; Hormiga et al., 2017).

University research must cover continual and demanding changing needs. To improve performance and differentiation, the research must be innovative, and this need has led to the concept of innovative university research (IUR). IUR can be defined as the generation of pioneering research by

* Corresponding author.

E-mail address: dainelis@ugr.es (D. Cabeza-Pullés).

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university groups, according to the content or process that research uses.

To analyze the IUR in university research groups, this study focuses on the role of the transactive memory system (TMS), a variable that has recently been attracting attention from academics and practitioners (Kotlarsky et al., 2015; Fan et al., 2016; Cao and Ali, 2018). The TMS explains how each member takes responsibility for his/her area of work, contributing knowledge to the group as a whole (Cabeza et al., 2013; Cao and Ali, 2018) while simultaneously fostering cohesion among members (Heavey and Simsek, 2015). Since the TMS comprises trust in the reliability of others' knowledge and the group's efficacy in identifying the differentiated knowledge of each member (Lewis, 2003; Fan et al., 2016; Cao and Ali, 2018), it may facilitate IUR in groups.

Research on TMSs has focused on explaining groups' cognitive processes, the factors that affect these processes, and the results of the group's actions for other processes (Huang, 2009; Lewis and Herndon, 2011; Kotlarsky et al., 2015; Cao and Ali, 2018). Many studies of the TMS have thus been performed in research laboratories (Hollingshead, 2001), with samples of students (Lewis, 2004) or teams from a single organization (Austin, 2003). There is, however, an empirical gap in analysis of TMS in research groups from different organizations, particularly in the university context to improve IUR – notwithstanding the fact that researchers propose organization of work in groups as a crucial factor for developing effective transactive memory (Zajac et al., 2014; Rasmus and Conny, 2015) that can benefit group IUR (Fan et al., 2016). Research analyzing the TMS from a managerial perspective is also necessary to understand the point of view of those responsible for the groups and to propose strategies and tools to enhance the benefits of the TMS.

Existing literature on TMS analyzes characteristics of the group's members (Zhang et al., 2007; Fan et al., 2016; Hood et al., 2015; Cao and Ali, 2018) and communication processes but not teams' characteristics, goals, managerial perceptions and work climate (Zhang et al., 2007; Kotlarsky et al., 2015). Mariano and Al-Arriayed (2017) propose that, another fruitful research area may regard the analysis of how organizational practices are influenced by TMS. This research addresses this call and analyzes how TMS mediates the relationship between group variables and IUR.

Our study analyzes descriptive variables of behavior that may be related to TMS and IUR: trust, collective mind (CM), and network ties (NT). Anderson et al. (2014) posed as an important topic in their research on Innovation and Creativity in Organizations, that few studies have been conducted to focus on an understanding of effects of general or specific personality dimensions on innovative behavior. Therefore, in our study, we propose, to give continuity to this idea through, trust and networking as elements that can improve innovative behavior. Since the TMS may enhance IUR, and the variables TRUST, CM, and NT can be considered as cognitive variables that improve the TMS, we propose TMS as a bridge between these variables and IUR. The main goal of this paper is thus to analyze how the variables TRUST, CM, and NT are related to IUR, and whether the TMS mediates the relationships of these variables to IUR in the university.

This article contributes to the literature in several ways. First, university research represents a specific and suitable context for the analysis of the TMS, IUR, and its drivers. Second, in this context, our research contributes to existing literature by demonstrating that TRUST, CM, and NT are antecedents of the TMS; that the TMS is related to IUR as a measure of performance; and that the TMS is a mediating variable in the relationships described above. Third, we extend the existing literature on cognitive variables and personality to improve performance and research group management, complementing existing studies on groups through analysis of managerial perceptions of these variables. From the perspective of practice, managers of research groups should attempt to develop TMSs in their work groups to obtain better results in IUR in order to make greater contributions to society. Our results offer some recommendations that university research group managers can use to improve internal group processes and management of them to enhance IUR.

The article is structured as follows: after this introduction, we present a literature review to develop the relationship between the variables and study hypotheses. We then present the methodology and data analysis. Finally, we discuss the results and present the main conclusions, limitations, and future lines of research.

Theoretical framework and hypotheses

The research context

One of universities' main objectives is knowledge creation (Hewitt-Dundas, 2012; Zhanga et al., 2013; Hemmert et al., 2014; García-Sánchez et al., 2017), and universities' research activities are a major force driving the growth process in advanced economies (Hewitt-Dundas, 2012; Meo and Usmani, 2014; Vázquez-Urriago et al., 2016; García-Sánchez et al., 2017). University research is comprised of activities that develop theories and models to explain and predict natural reality (Pavitt, 1998). The average figure of 213,405.70 scientific documents published in European universities from 1996 to 2011 – primarily in the sciences and social sciences (Meo and Usmani, 2014) – attests to the importance of university research, justifying the need to advance knowledge on it (Lai and Tsai, 2010; García-Sánchez et al., 2017). Empirical studies show that academic knowledge is beneficial because the world of the university offers new theoretical perspectives, innovative techniques and abilities that are very difficult for other organizations to develop (Prajogo and Hong, 2008; Un and Asakawa, 2015). These characteristics permit the application of valuable knowledge and abilities developed through experience to solve new and complex problems.

To develop their IUR, universities form research groups as one of the main sources contributing innovative results to regional and national socioeconomic development (Caldera and Debande, 2010; Patanakul and Pinto, 2014). The literature proposes that organizations increasingly trust groups as a work tool to overcome challenges (Lee et al., 2014; Kotlarsky et al., 2015), as in the case of the groups that run university research (Bouncken, 2011; Scarbrough et al., 2015; Fan et al., 2016).

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