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POTENTIAL AND REALIZED ABSORPTIVE CAPACITY: AN ANALYSIS IN PROJECT TEAMS

Capacidade de absorção potencial e realizada: Uma análise em times de projeto

Capacidad de absorción potencial y realizada: Un análisis en equipos de proyecto

Rodrigo Valio Dominguez Gonzalez[1] | valio80@unicamp.br | ORCID: 0000-0003-0531-9638

[1]Universidade Estadual de Campinas, Faculdade de Ciências Aplicadas, Limeira, SP, Brazil

ABSTRACT

Absorption capacity (ACAP) is a fundamental factor for the firm to achieve dynamic capability and competitive advantage. Previous studies have identified two dimensions that make up this construct, called potential absorption capacity (PACAP) and realized absorption capacity (RACAP). This study investigates the influence of the two dimensions of ACAP in relation to project performance and innovation, and also analyzes the mediating role that RACAP plays in the relationship between PACAP and project performance and innovation. This study explores these relationships using the structural equation modeling (SEM) method, using the partial least squares (PLS) approach, applied to a sample of 128 companies in the automotive sector, specifically manufacturers of parts. The results show that project performance and innovation are impacted differently by PACAP and RACAP. In addition, the study shows that RACAP plays a mediating role in the relationship between PACAP and project performance and innovation.

Keywords: absorptive capacity, potential absorptive capacity, realized absorptive capacity, project performance, innovation.

RESUMO

A capacidade de absorção (ACAP) é um fator fundamental para a firma alcançar capacidade dinâmica e vantagem competitiva. Estudos prévios identificam duas dimensões que compõem esse constructo, denominadas capacidade de absorção potencial (PACAP) e capacidade de absorção realizada (RACAP). Este estudo investiga a influência das duas dimensões da ACAP em relação à performance e inovação de projeto, e também analisa o papel mediador que a RACAP exerce na relação entre a PACAP e performance e inovação de projeto. Este estudo explora essas relações a partir do método de modelagem de equação estrutural (SEM), utilizando a abordagem de mínimos quadrados parciais (PLS), aplicado a uma amostra de 128 empresas do setor automobilístico fabricantes de componentes automotivos. Os resultados mostram que a performance e a inovação do projeto são impactadas de maneira distinta pela PACAP e RACAP. Além disso, o estudo aponta que a RACAP exerce papel mediador nas relações entre a PACAP e a performance e inovação do projeto.

Palavras-chave: *capacidade de absorção, capacidade de absorção potencial, capacidade de absorção realizada, performance de projeto, inovação.*

RESUMEN

La capacidad de absorción (ACAP) es un factor fundamental para que la empresa logre capacidad dinámica y ventaja competitiva. Estudios previos han identificado dos dimensiones que componen este constructo, llamadas capacidad de absorción potencial (PACAP) y capacidad de absorción realizada (RACAP). Este estudio investiga la influencia de las dos dimensiones de la ACAP en relación con el desempeño y la innovación del proyecto, y también analiza el papel mediador que juega la RACAP en la relación entre la PACAP y el desempeño y la innovación del proyecto. Este estudio explora estas relaciones mediante el método de modelado de ecuaciones estructurales (SEM), utilizando el enfoque de mínimos cuadrados parciales (PLS), aplicado a una muestra de 128 empresas del sector de la automoción, fabricantes de piezas. Los resultados muestran que el desempeño y la innovación del proyecto se ven afectados de manera diferente por la PACAP y RACAP. Además, el estudio señala que la RACAP juega un papel mediador en la relación entre la PACAP y el desempeño e innovación del proyecto.

Palabras clave: *capacidad de absorción, capacidad de absorción potencial, capacidad de absorción realizada, desempeño del proyecto, innovación.*

INTRODUCTION

Companies in the automotive sector carry out intense design activities (Gonzalez, 2021), in view of the need to develop and improve the produced products and components (Gonzalez & Martins, 2014; Rodríguez et al., 2014). Project teams are characterized as temporary organizational formats, which have a specific and unique mission, being composed of key people with multidisciplinary skills aligned with the objectives of solving specific problems and proposing innovations (Wang et al., 2015).

Companies in the automotive sector, more specifically manufacturers of parts, normally work in partnership with automakers in product development. The approach to projects between these organizations demands absorption of knowledge through investment in research and development (R&D), partnerships with external agents, or even in internal learning processes (Gonzalez & Melo, 2018; Mahmud et al., 2020). These actions represent a commitment of the firm's resources in order to ensure technological advances in the new products made available to automakers and the consumer market (Clark et al., 1987; Gonzalez & Martins, 2014; Sánchez et al., 2020). In this way, automakers are the drivers and guides of innovation actions, which demand innovations in components and manufactured technologies from their suppliers (Gonzalez & Martins, 2014). Manufacturers of parts, in turn, develop project activities, especially to develop new products and processes that incorporate the requirements of automakers (Clark et al., 1987).

In this context, project management becomes challenging, considering global competition and the reduction of time to market for product projects in the automotive sector (Gonzalez & Martins, 2014; Lin et al., 2016). Grant (1996) points out that the two most important concepts for the success of projects are initiatives aimed at absorptive capacity (ACAP) and knowledge management (KM). While KM allows the identification, storage and distribution of tacit knowledge through social interactions between team members (Gonzalez & Martins, 2014; Jansen et al., 2005), and explicit knowledge, using organizational information systems (Gonzalez & Martins, 2014), ACAP refers to the expansion of the team and organizational knowledge base through knowledge acquired externally to the organization (Cohen & Levinthal, 1990).

Innovative products and processes, which incorporate new attributes that differentiate them from competitors and meet the latent demands of customers, require new skills or at least the combination of skills (Sánchez et al., 2020). The development of new skills or the combination of pre-existing skills are the result of a process of acquisition, assimilation, transformation and application of knowledge, called ACAP (Cohen & Levinthal, 1990; Jansen et al., 2005; Mahmud et al., 2020; Wang et al., 2015).

The study of ACAP in project teams is peculiar in relation to the traditional concept of ACAP at the organizational level, as one must consider the temporary nature and specific goals of the format of these teams. While organizational ACAP aims to add new knowledge to routines and processes in order to improve their efficiencies (Zahra & George, 2002), in project teams, ACAP must fill gaps in knowledge and skills, allowing the development of something new for

the organization, which generates a competitive advantage (Sánchez et al., 2020). Thus, the need to absorb knowledge becomes more prominent in project activities.

Within project teams, ACAP refers to the primary knowledge mastered by a team that originates from knowledge acquired in previous projects in a cumulative way (Cohen & Levinthal, 1990; Zander & Kogut, 1995). The knowledge ACAP of a project team supports the process of using and creating knowledge, contributing to success of project, that is, the ability of the project team to develop the scope within the planned time and cost, add value to the customer (Awe et al., 2020) and also absorb new knowledge required by the project through interactions with external partners, or through internal learning initiatives (Jansen et al., 2005; Popaitoon & Siengthai, 2014; Tsai, 2001).

According to Zahra and George (2002), ACAP has two dimensions, called (i) potential absorptive capacity (PACAP) and (ii) realized absorptive capacity (RACAP). PACAP consists of the acquisition and assimilation phases of knowledge, and aims to identify and acquire new external knowledge. RACAP is constituted by the phases of transformation and application of knowledge, presenting an internal look at the organization with the objective of promoting new insights from the combination of pre-existing and newly acquired knowledge. These two types of ACAP jointly increase the project team's ability to achieve innovation and meet the planned objectives, that is, to achieve project performance (Ali & Park, 2016).

From the definition of ACAP by Cohen and Levinthal (1990) and the distinction of ACAP into two components (PACAP and RACAP) by Zahra and George (2002), many studies have been carried out in order to analyze ACAP and the relationships between ACAP, external sources, innovation, organizational performance (Flor et al., 2018; Limaj & Bernroider, 2019; Mahmud et al., 2020). These studies claim that external sources of knowledge interfere with innovation (Flor et al., 2018; Limaj & Bernroider, 2019) and that ACAP is positively related to performance. With regard to the distinctions between PACAP and RACAP, Ali et al. (2020) and Gonzalez and Melo (2019) observe positive relationships between them and innovation. In turn, Lin et al. (2016) and Walheiser et al. (2021) verify that only RACAP exerts a direct positive influence on innovation. If, on the one hand, such research shows the advances of empirical tests, on the other hand, they also suggest some gaps, not only related to ACAP at the organizational level, but mainly in the context of project teams.

Some studies analyze the relationship between ACAP and innovation in teams (Gonzalez, 2021; Limaj & Bernroider, 2019), however they are not based on the two components of ACAP (PACAP and RACAP). More recent studies that analyze ACAP from its two components are limited to relating them to team innovation without considering its performance aspects (Popaitoon & Siengthai, 2014; Rodríguez et al., 2014). Considering that RACAP refers to the application of knowledge and PACAP, to the research of new knowledge, it is possible to assume that the effects of PACAP on innovation or performance can be mediated by RACAP, however, research on ACAP does not verify that investigate such a mediating relationship.

In view of such evidence, it is imminent to improve studies on ACAP in the context of organizational teams, as is the case with project teams (Ali et al., 2020; Gonzalez & Melo, 2019;

Lin et al., 2016 ; Walheiser et al., 2021). Thus, considering a specific sectoral context, such as that of automotive component suppliers, which have a peculiar context in their relationship with automakers, an article is written, reporting the results of a research guided by two questions. The first of them:

> (1) What is the impact of ACAP on the innovation and performance of project teams?
> By distinguishing the ACAP in two dimensions, and taking into account that the PACAP aims to obtain external knowledge in order to be transformed and applied in the internal scope of the organization, the second question of this research is proposed:
>
> (2) Is PACAP an antecedent of RACAP in the context of project teams in parts manufacturers companies?

THEORETICAL FRAMEWORK AND DEVELOPMENT OF HYPOTHESES

Development of hypotheses

Relating absorptive capacity and project performance and innovation

ACAP was initially defined by Cohen and Levinthal (1990) as "the ability of a firm to recognize the value of new external information, assimilate it and apply it to commercial ends (p. 128)." Moreover, they elucidated that ACAP relies on the accumulated prior knowledge on R&D projects, which can be used to create innovation. Zahra and George (2002) reconceptualized Cohen and Levinthal's original definition, defining ACAP as the set of organizational routines and processes through which the firm acquires, assimilates, transforms, and exploits knowledge with the purposes of producing dynamic capability. ACAP was initially conceptualized by Cohen and Levinthal (1990) and Zahra and George (2002) at the firm level, and later at the individual level (Cadiz et al., 2009) and at the team level (Batarseh et al., 2017; Lowik et al., 2016). Following this later scenario, we consider the definition of Ali et al. (2020), who delineate ACAP as the ability to extract and exploit knowledge at the team level, and investigate how ACAP interferes in project performance and project innovation.

Zahra and George (2002) propose that ACAP is composed of two main elements: Realized ACAP (RAPAC) and Potential ACAP (PACAP). RACAP is similar to the original concept introduced by Cohen and Levinthal concerning what actually affects innovation outcomes and increases competitive advantage. PACAP, in its turn, allows the firm to sustain long-term competitive advantage (Zahra & George, 2002). At the project team level, RACAP refers to the project team's capacity to transform and exploit the absorbed knowledge. RACAP also increases project performance by enabling innovation in specific tasks (Tsai, 2001). Conversely, PACAP involves the ability to acquire and assimilate new knowledge, allowing the firm to assess and

acquire external knowledge (Zahra & George, 2002). Therefore, PACAP and RACAP are distinct concepts that require different structures, objectives, and strategies from the firm (Carrión et al., 2012; Rodríguez et al., 2014).

This distinction between the two ACAP components can be verified through one of the conclusions of the work by Lin et al. (2016). The authors observed that firms can acquire and assimilate knowledge, however, they may not have the ability to apply or transform externally absorbed knowledge in situations that lead to improved performance or organizational innovation (Popaitoon & Siengthai, 2014; Sánchez et al., 2020) . Thus, high PACAP does not necessarily imply increased project performance or innovation. It is the firm's role to develop an internal structure that supports the process of transformation and application of knowledge acquired, and also to build a repository of this knowledge acquired and assimilated in order to guarantee its maintenance within the organization, and also to facilitate access to this intangible asset by individuals and teams so that they can apply and transform it, in the future, into actions that bring a competitive edge (Carrión et al., 2012; Rodriguez et al., 2014).

Focusing specifically on project teams, its members act simultaneously in the acquisition processes (related to PACAP) and application of knowledge (related to RACAP) (Popaitoon & Siengthai, 2014; Rodríguez et al., 2014). When team members present knowledge assimilated , their transformation and application capabilities are expanded. Consequently, RACAP and PACAP coexist within the structure of project teams (Ali et al., 2020). Differently, in routine operations and processes, normally, individuals who develop PACAP are not involved in RACAP (Rodriguez et al., 2014). Works such as those by Ali et al. (2020), Rodríguez et al. (2014), Ali and Park (2016) evaluate the relationship between PACAP and RACAP in the organizational environment in routine processes, however, considering that RACAP and PACAP are developed by the same individuals within the project teams, we propose the first hypothesis of research:

H1: Higher PACAP level positively impacts on the RACAP of project teams.

Authors such as Benitez et al. (2017) and Gonzalez and Melo (2018) point out that innovation and performance of project teams are achieved through knowledge distributed among team members, when they interact collaboratively. Project teams develop their innovation activities based on the sharing of knowledge among their members. And, when internal knowledge is not enough in order to reach a problem solution, team members depart to a strategy of exploring and assimilating external knowledge, related to PACAP (Xie et al., 2018). Capturing new external knowledge, as well as the results of innovation, depends on the accumulation of primary knowledge gained by team members (Cohen & Levinthal, 1990). In this way, PACAP depends on the knowledge primary structure retained by the project team. External knowledge, after being acquired and assimilated by individuals, is incorporated into the team's primary knowledge base, being used for the development of project tasks and to achieve innovation. Results of previous studies show that ACAP has a positive impact on organizational innovation (Flor et al., 2018; Jansen et al., 2005; Walheiser et al., 2021Burcharth et al., 2015; Jansen et al., 2005) and innovation in project teams (Gonzalez, 2021; Gonzalez & Melo, 2019; Lin et

al., 2016). However, these studies do not assess how isolated ACAP components (PACAP and RACAP) relate to innovation in project teams. Furthermore, previous studies do not assess the impact of RACAP and PACAP in relation to the performance of project teams with regard to compliance with aspects related to efficiency and effectiveness. Therefore, we propose the following hypotheses:

H2a: PACAP is positively related to project performance.

H2b: PACAP is positively related to project innovation.

Although acquisition and assimilation of external knowledge (PACAP) allows teams to absorb information and insights to address problems that require innovative interventions, transformation and exploitation (RACAP) support the development of these creative solutions and project performance. It is through RACAP that the team exploits the new acquired knowledge, allowing the creation of value and competitive advantage (Ali & Park, 2016; Sánchez et al., 2020; Xie et al., 2018). RACAP involves the transformation and exploitation of the knowledge externally acquired and assimilated by the integration into processes of the project team, allowing for the improvement of the performance of the project results in terms of complying with the budget, deadlines, scope, and quality of deliverables in addition to enabling the introduction of innovations to the scope of the product or process (Ali et al., 2020). Whereas PACAP influences project performance and the introduction of innovation by making external knowledge available, RACAP interferes in the development of the activities themselves on the part of team members, influencing the project results and project innovation (Ali et al., 2020; Flor et al., 2018, Gonzalez, 2021). Accordingly, PACAP and RACAP conceptually differ and both have different roles and goals for the success of the project activity (Gonzalez, 2021; Rodriguez et al., 2014). Nevertheless, the benefits of both ACAP dimensions are complementary. PACAP alone allows for the improvement of the knowledge stock, but a project team will not obtain performance gains if it does not present RACAP. Otherwise, if a team presents RACAP and does not develop PACAP, it may gain short-term competitive advantage; however, it will lack the capacity to respond to more complex requirements demanded by the market (Xie et al., 2018). Based on this discussion, we formulate two hypotheses regarding RACAP:

H3a. RACAP is positively related to project performance.

H3b. RACAP is positively related to project innovation.

Although PACAP and RACAP play different roles in terms of innovation of the project teams, their effects are complementary (Zahra; George, 2002; Flor et al., 2018). Whereas PACAP promotes the acquisition of new external knowledge, RACAP inserts this knowledge in the context of the firm in innovation activities, which requires its transformation and exploitation (Rodríguez et al., 2014). Although previous studies have evaluated the role of PACAP on organizational

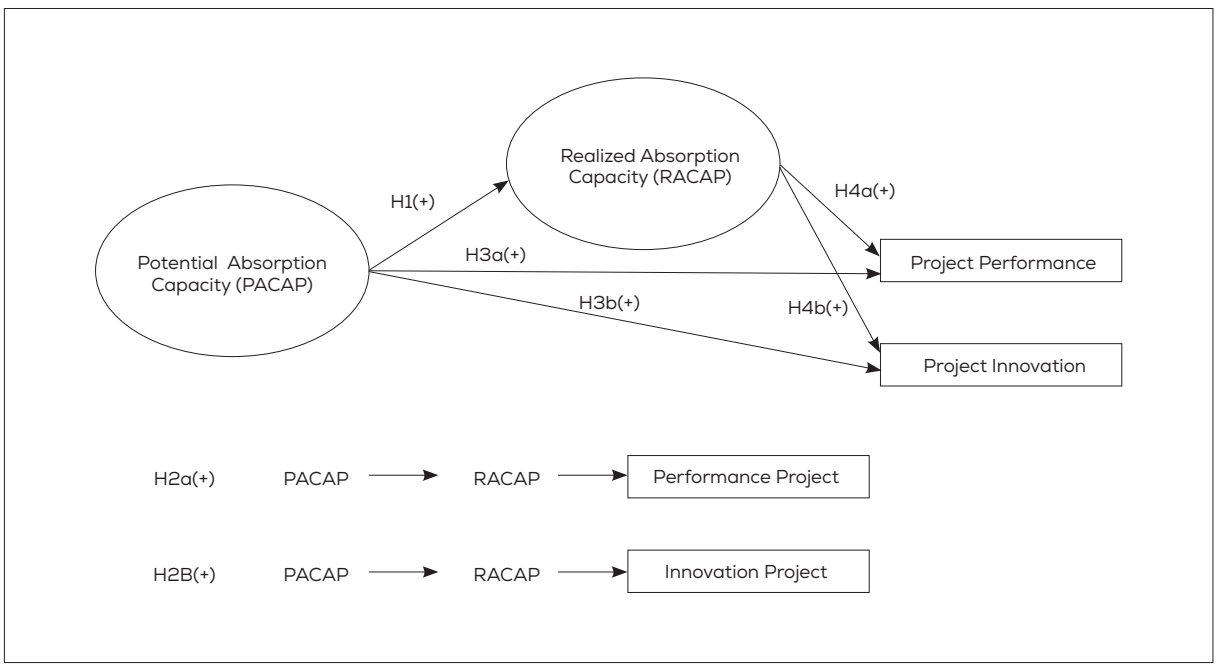
innovation or in project teams (Ali & Park, 2016; Flor et al., 2018; Walheiser et al., 2021), there is a gap that assesses the mediating role of RACAP in relationship between PACAP and innovation and performance of project teams. Based on these considerations, we propose that RACAP acts as a mediating dimension in the relation between PACAP and project performance and project innovation:

H4a: The relation between PACAP and project performance is positively mediated by RACAP.

H4b: The relation between PACAP and project innovation is positively mediated by RACAP.

Figure 1 illustrates the theoretical model and research hypotheses.

Figure 1. Theoretical model and research hypotheses



Source: Elaborated by author.

METHOD

The research aims to evaluate the relationship between the two ACAP components on project performance and innovation. Thus, initially, we characterize these two dependent or exogenous constructs of our research. The project performance is evaluated in this work in line with authors such as Garcia et al. (2008) and Yang et al. (2014), who consider that project performance encompasses the external success of the new product, regarding client satisfaction and generation of competitive differential, and also the internal success, with regard to the fulfillment of the

triad scope, time and cost. In this sense, this study evaluates project performance through two dimensions: (i) effectiveness, which enables the firm to find new markets and opportunities; and (ii) efficiency, which takes into account the performance of the project in terms of time, scope and cost. The second exogenous variable of our research model, project innovation, concerns the degree to which teams develop changes in existing products or processes, or even develop new products or processes, using internal or external knowledge (Ali et al., 2020; Popaitoon & Siengthai, 2014).

Sample and data collection

The study data were collected from the survey method carried out in the Brazilian auto parts industry. In this survey, employees who work at the level of direction, coordination, or management of projects were considered as respondents. The auto parts industry was chosen for three reasons. First, auto parts supplier companies are constantly required by automakers to develop new products and processes that require the absorption of new external knowledge as well as its exploitation. Second, the development of products and processes in the automotive industry requires not only individual effort, but also the organization of multidisciplinary teams, whose members share and integrate knowledge to achieve innovative results. Third, the set of knowledge and competences is constantly changing in this sector, thus requiring project teams to absorb and apply new external knowledge.

The initial questionnaire was submitted to the evaluation of academics and project managers of the area aiming at reviewing and validating the research instrument. Four academics and four professionals with more than 5 years of experience in managing and coordinating projects in companies in the automotive industry were consulted. They provided feedback on clarity, adequacy, and readability of scales and instructions.

This study has as research population all companies in the Brazilian auto parts sector. The sample is characterized as non-probabilistic, chosen for convenience, and originated from the catalog of the National Union of Auto Parts Manufacturers (Sindipeças), available on the website http://www.sindipecas.org.br, composed of 481 companies. After identifying the companies, telephone calls were made to present the research and obtain access to the interviewee (director and project manager or product and process engineering), as well as to determine the best way to send the questionnaire. An email was sent to each respondent, including a cover letter and the survey form. The responses were considered within a period of one month after sending the request email, and the collection of information took place in the months of March and April 2021. The survey reached a total of 128 usable returned questionnaires, which represent 128 different companies in the surveyed sector (26.6% response rate).

In this study, the nonresponse bias was also estimated. This test assesses whether there is a significant difference between early and late respondents (Armstrong & Overton, 1977). This analysis was performed by the t-test of independent samples involving variables of ACAP, team

performance and innovation. The obtained results showed no significant difference between the two groups.

After data collection, the common method bias was evaluated using Harman's single-factor test. Based on principal component analysis with no rotation, 12 factors with eigenvalues greater than 1.0 were found, with the highest factor representing 15% of all the variance. As no single factor emerged, and no factor accounted for most of the variance, it is inferred that the common bias of the method is unlikely. A summary of the demographic characteristics of companies and respondents is presented in Table 1.

Table 1. Demographic characteristics of companies, teams, and respondents

Measurement	Items	Frequency	Percentage
Surveyed companies			
Number of employees	50 or less	13	10.16
	51-100	18	14.06
	101-500	32	25.00
	501-1000	38	29.69
	1001 or above	27	21.09
Teams			
Team size	3-5	26	20.31
	6-10	48	37.50
	11-20	34	26.56
	21 or above	20	15.63
Team tenure	3M-6M	38	29.69
	7M-1Y	45	35.16
	1Y 1M-2Y	31	24.22
	2Y or above	14	10.94
Respondents			
Gender	Male	79	61.72
	Female	49	38.28
Education level	Undergraduate degree	11	8.59
	Graduate degree	72	56.25
	Master's degree or higher	45	35.16
Position	Coordination/Supervision	37	28.91
	Manager	68	53.13
	Senior Manager/CEO	23	17.97
Age range	18-25	33	25.78
	26-35	41	32.03
	36-45	29	22.66
	46 or above	25	19.53

Source: Elaborated by author.

MEASUREMENTS

The questionnaire was developed based on the theoretical framework previously described. This study used validated in the literature. A seven-point Likert scale, with 1 corresponding to "strongly disagree" and 7 to "strongly agree," was used to measure the questionnaire items. Next, the measurement items of the study constructs are detailed.

Regarding ACAP, the measurement proposed by Jansen et al. (2005) was used, as per the Appendix. On this scale, RACAP consists of eleven measurement items, six of which refer to the knowledge transformation process, and five items, to knowledge exploitation. PACAP, in turn, consists of seven items, five of which refer to the knowledge acquisition process, and two other items address knowledge assimilation. On this scale, the authors changed the words "unit" to "project team" and "employee" to "team member" to contextualize the objectives of this research.

Project performance refers to the teams' perceived success in achieving efficiency in terms of deadlines, costs, and operational efficiency (Garcia et al., 2008) in addition to effectiveness in achieving customer satisfaction (Yang et al., 2014). The scale of this construct was based on the study of Li and Huang (2013). Both efficiency and effectiveness are measured by three items each (Li & Huang, 2013). As for project innovation, this construct was assessed using eight measurement items from the scale developed by Tjosvold et al. (2004).

Finally, many variables are potentially important for the performance of the project and innovation team, in such a way they can influence the results of this research. The authors control the effects of these variables from the control variables, which are introduced to the study model. Based on previous studies on project performance and innovative performance of teams, the following control variables were included: team size (TS), team tenure (TT), and task interdependence (TI). This last variable was evaluated using a six-item scale proposed by Ali et al. (2020).

RESULTS

Partial Least Squares (PLS) was applied to test the present research model. PLS allows simultaneously assessing reliability and validity of measurement items as well as the relation between constructs (Hair et al., 2013). PLS was used for two main reasons. First, it can test complex models with first- and second-order constructs. Second, PLS can generate reliable results from small sample sizes (Hair et al., 2013).

Initially, we tested the external validity of the study measurement model using confirmatory factor analysis to assess the accuracy of the items assigned to the constructs and the structure of the measurements. We verified goodness of fit by analyzing the standardized root mean square residual (SRMR), unweighted least squares (ULS), unweighted least squares discrepancy (dULS), and geodesic discrepancy (dG). According to Table 2, all goodness of fit values are below the acceptable 95% of the HI95 values, indicating that the measurement items and the construct

structure are adequate. Next, we follow a two-step model for addressing the constructs, as RACAP, PACAP, and team performance consist in second-order constructs.

Table 2. Results of the confirmatory factor analysis

Measurements	Second-order constructs		Conclusion	Firs-order constructs		Conclusion
	Value	HI95		Value	HI95	
SRMR	0.067	0.090	Accepted	0.062	0.122	Accepted
d_{ULS}	4.693	7.013	Accepted	1.566	5.249	Accepted
d_G	5.226	131.737	Accepted	1.139	3.307	Accepted

Source: Elaborated by author.

Measurement model

Primarily, to assess the reliability and validity of the research model, the confirmatory factor analysis (CFA) technique was conducted. In accordance with Hair et al. (2013), the construct reliability measurements used in this study are Cronbach's alpha (α) and Dijkstra–Henseler Rho_A. The minimum value for these two measurements is 0.70 (Hair et al., 2013). As observed in Table 3, all constructs have an adequate reliability level.

Table 3. Reliability, multicollinearity, and convergent validity

Variable	Items	Loading	α	CR	AVE	ρA	VIF[a]
Reflective measurement							
Project innovation	PI1	0.773	0.817	0.846	0.715	0.808	2.56
	PI2	0.757					2.13
	PI3	0.777					2.01
	PI4	0.818					1.84
	PI5	0.830					1.75
	PI6	0.778					2.26
	PI7	0.817					2.38
	PI8	0.794					1.91
Task interdependence	TI1	0.772	0.748	0.790	0.643	0.753	2.36
	TI2	0.735					2.48
	TI3	0.741					2.07
	TI4	0.810					1.88
	TI5	0.753					2.45
	TI6	0.768					1.75

Continue

Table 3. Reliability, multicollinearity, and convergent validity

Concludes

Variable	Items	Loading	α	CR	AVE	ρA	VIF[a]
Formative measurement							
PACAP (second-order construct)							
Acquisition (reflective construct)	ACQ1	0.823	0.823	0.773	0.653	0.774	1.73
	ACQ2	0.874					1.55
	ACQ3	0.790					1.90
	ACQ4	0.775					1.84
	ACQ5	0.844					1.92
Assimilation (reflective construct)	ASS1	0.861	0.795	0.796	0.668	0.778	2.04
	ASS2	0.853					2.22
RACAP (second-order construct)							
Transformation (reflective construct)	TR1	0.773	0.778	0.805	0.671	0.781	2.04
	TR2	0.785					1.73
	TR3	0.844					1.91
	TR4	0.816					2.33
	TR5	0.780					2.18
	TR6	0.843					1.65
Exploitation (reflective construct)	EXP1	0.833	0.790	0.788	0.678	0.788	1.77
	EXP2	0.821					1.93
	EXP3	0.838					1.97
	EXP4	0.786					1.64
	EXP5	0.773					1.84
Team performance (second-order construct)							
Efficiency (reflective construct)	EF1	0.812	0.866	0.781	0.705	0.796	2.16
	EF2	0.818					2.28
	EF3	0.873					1.83
Effectiveness (reflective construct)	EFT1	0.781	0.842	0.819	0.680	0.793	2.15
	EFT2	0.815					2.36
	EFT3	0.792					1.66

Notes: a: Cronbach's α; CR: composite reliability; ρA: Dijstra–Henseler's rho; AVE: average variance extracted; [a] percentage of variance of item explained by the latent variable.

Source: Elaborated by author.

The evaluation of formative measurement models requires the multicollinearity test between items that compose the constructs, as well as the analysis of factor loadings between items and constructs, to validate them (Hair et al., 2013). The amount of multicollinearity was measured using the variance inflation factor (VIF) and the tolerance value of the independent constructs. Tolerance values for all constructs are lower than 0.10, as recommended by Hair et al. (2013), and the VIF values of the items ranged between 1.48 and 2.56 (Table 3), indicating that there is no multicollinearity between the items. All of them were statistically significant at p 0.05 level after performing bootstrapping analysis with 5,000 resamples.

Convergent validity is assessed by estimating the average variance extracted (AVE), which indicates the amount of variance that is shared by the items that compose the constructs and

by the composite reliability (CR). The AVE values of all constructs are above the minimum acceptable value of 0.50; and the CR values are above 0.70, as recommended by Hair et al. (2013). In addition, CFA measures the factor loading, which indicates the contribution of each item in relation to the variance of the latent construct, with the purpose of complementing the convergent validity assessment. As demonstrated in Table 3, all reflective items account for a factor loading greater than 0.70 and are significant at the 0.001 level, indicating that they are relevant to the formation of constructs and denoting convergent validity (Hair et al., 2013). Regarding discriminant validity, this study is based on two methods: (1) All reflective constructs meet the criteria of Fornell and Larcker (1981), as the square root of AVE of each construct is greater than the correlations between the constructs (Table 4); (2) the Heterotrait-Monotrait (HTMT) values are also presented in Table 4. All values above the diagonal are lower than 0.85, indicating that there is discriminant validity (Henseler, et al., 2015).

Table 4. Discriminant validity – correction matrix and Heterotrait-Monotrait (HTMT) ratio

Construct	ACQ	ASS	TR	EXP	EF	EFT	PI	TI
ACQ	*0.8081*	0.4189	0.3206	0.2678	0.2056	0.2254	0.1844	0.2589
ASS	0.3782	*0.8173*	0.3912	0.3912	0.2987	0.2437	0.1563	0.1678
TR	0.2321	0.2714	*0.8191*	0.5156	0.3890	0.3195	0.4336	0.1784
EXP	0.1883	0.2516	0.8234	*0.8234*	0.2467	0.3784	0.4238	0.2563
EF	0.1336	0.1893	0.1575	0.1575	*0.8396*	0.5568	0.4655	0.3018
EFT	0.1488	0.1945	0.2814	0.2814	0.4387	*0.8246*	0.4217	0.1431
IP	0.0873	0.0977	0.3883	0.3883	0.3518	0.3318	*0.8456*	0.2566
TI	0.1586	0.1784	0.1431	0.1431	0.1891	0.0890	0.1745	*0.8019*

Notes: The values of diagonal cells (italics) refer to the square root values of AVE; below diagonal elements are the correlations between constructs; above diagonal elements are the HTMT ratio values.

Source: Elaborated by author.

Evaluation of the structural model

The structural model is evaluated following the steps recommended by Hair et al. (2013). First, this study uses the resampling bootstrap method with 5000 associated with the same number of observations as the original sample (i.e., 128 bootstrap cases) to generate standard error and t-value (Hair et al., 2013). The study evaluates the relations between latent variables through the sign and magnitude of path coefficients. Results concerning the relations of latent variables are presented in Table 5.

Table 5. Structural model analysis

Hypothesis	Relation	Path coefficient	t-statistics	p-value	Sig. level	Results	f^2
H1	PACAP ' RACAP	0.588	8.658	0.000	***	Supported	0.458
H2a	PACAP ' PP	0.127	1.335	0.053	NS	Not Supported	0.142
H2b	PACAP ' PI	0.253	3.119	0.003	**	Supported	0.251
H3a	RACAP ' PP	0.334	4.436	0.000	***	Supported	0.284
H3b	RACAP ' PI	0.431	6.777	0.000	***	Supported	0.347
Control variables	TS ' PP	-0.112	-1.270	0.056	NS	Not Supported	0.105
	TT ' PP	0.195	2.528	0.028	*	Supported	0.232
	TI ' PP	-0.046	0.488	0.062	NS	Not Supported	0.063
	TS ' PI	0.120	1.295	0.054	NS	Not Supported	0.126
	TT ' PI	0.174	2.331	0.031	*	Supported	0.230
	TI ' PI	-0.055	-0.573	0.060	NS	Not Supported	0.086

Notes: * p < 0.05; ** p < 0.01; *** p < 0.001

Source: Elaborated by author.

The R^2 values for the endogenous constructs are above the appropriate level (Falk; Miller, 1992). The values found were 0.47 and 0.56 for the project performance and project innovation constructs, respectively, and 0.41 for RACAP, considered moderate by Falk and Miller (1992). The overall quality of the model was assessed by the goodness-of-fit index (GoF), which is calculated from the geometric mean of the AVE of latent variables and the mean of the R^2 of the endogenous variables (Tenenhaus et al., 2005). The estimated GoF was 0.478, exceeding the cut-off value of 0.36 (Wetzels et al., 2009). In addition, the predictive quality measure of the proposed model was assessed using the Stone-Geisser (Q^2) value. A Q^2 value above zero suggests that the model has acceptable predictive validity (Geisser, 1975). In the model of this study, Q^2 is 0.45 for team performance, 0.53 for project innovation, and 0.42 for RACAP, supporting the hypotheses of this study. The effect size (f^2) values were estimated to measure the level of importance of an independent variable over a dependent variable of the structural model. The threshold values for small, medium, and large effect sizes are 0.02, 0.15, and 0.35, respectively

(Chin, 2010). As indicated in Table 5, with the exception of the refuted hypothesis (H2) and the Team Size and Task Interdependence control variables, which have low f^2 values, the other hypotheses have medium or high f^2 values.

Table 5 presents the results of the structural model significance tests. First, the model shows that PACAP has a significant and positive direct relation to RACAP ($\beta = 0.588$, $p < 0.001$) and project innovation ($\beta = 0.253$, $p < 0.01$), and it was not significant regarding project performance. RACAP, in turn, showed a significant positive relation to project performance ($\beta = 0.334$, $p < 0.001$) and project innovation ($\beta = 0.431$, $p < 0.001$). As for the control variables, only Task Tenure showed a significant relation to the two exogenous variables: project performance ($\beta = 0.195$, $p < 0.05$) and project innovation ($\beta = 0.174$, $p < 0.05$).

Mediating effect of RACAP on relationship between PACAP and project performance and innovation

This study uses a non-parametric resampling method (resampling size = 500) to assess the mediating effect of RACAP on the relationship between PACAP and project performance and innovation, according to Preacher and Hayes (2008). VAF is a measure used to supplement non-parametric tests, which determines the proportion of the indirect effect in relation to the total effect (ie, direct effect + indirect effect) (Hair et al., 2013).

According to Table 6, RACAP positively mediates the relationship between PACAP and project performance ($\beta = 0.258$, $p < 0.001$), supporting H4a and project innovation ($\beta = 0.295$, $p < 0.001$), supporting H4b.

Table 6. Mediation test by resampling model

IV	M	DV	Direct effect (t-value)	Indirect effect (t-value)	Total effect (t-value)	VAF (%)	Interpretation	Conclusion
PACAP	RACAP	PP	0.127^{NS} (1.485)	0.258*** (6.674)	0.385	67.0	Indirect Mediation	H4a supported
PACAP	RACAP	PI	0.253** (5.331)	0.295*** (7.913)	0.548	53.8	Partial Mediation	H4b supported

Notes: IV – Independent variable; M – Mediator; DV – Dependent variable; VAF – Variance accounted for; ** p < 0.01; *** p < 0.001; NS – Not Significant

Source: Elaborated by author.

DISCUSSION AND CONCLUSION

Theoretical contributions

Previous studies have drawn attention to the importance of knowledge as a key factor for organizations to remain competitive (Zahra & George; Cohen & Levinthal, 1990). The knowledge-based view (KBV) and the theory of dynamic capability are in line with this idea and deem knowledge as the firm's main resource capable of bringing sustainable competitive advantage (Wang et al., 2015; Zander & Kogut, 1995). In particular, dynamic capability exposes

the firm's need to have the ability to absorb knowledge so that its competences are redeveloped to meet new market demands (Zahra; George; Teece et al., 1997). The most cited and used model on ACAP was proposed by Zahra and George (2002), in which they propose that ACAP is composed of two dimensions (PACAP and RACAP). Since the publication of the model proposed by Zahra and George, until today, many studies have sought to analyze the impact of ACAP and its dimensions on firms' performance and innovation (Ali et al., 2020; Sánchez et al., 2020). The model developed in the present study contributes to the body of knowledge on ACAP by investigating the impact of PACAP and RACAP on innovation and performance in the context of project teams in auto parts manufacturing companies. In addition, this study also analyzes the mediating role played by RACAP in the relationship between PACAP and exogenous variables.

The first result of this study indicates that PACAP is strongly and positively related to RACAP, in line with the ACAP assumptions of cumulativeness presented by Cohen and Levinthal (1990), according to which the research activity and association with other external agents, assuming the acquisition and assimilation of knowledge (PACAP), expand the base of the knowledge repository and support the transformation and exploitation of knowledge (RACAP).

Second, according to the present results, RACAP mediates the positive effects of PACAP on project performance and innovation. These results demonstrate that the project teams of auto parts manufacturing companies must seek the acquisition and assimilation of external knowledge to leverage their performance as well as their innovation results. Furthermore, in this study we verified that PACAP is directly and positively related to project innovation and does not present a significant relation to project performance. The current theory does not show consensus on the relation between PACAP and innovation. While studies, such as those conducted by Limaj and Bernroider (2019) and Ali and Park (2016), found results in line with the present research, Rodríguez et al. (2014) did not identify a direct relation between PACAP and innovation. The sector researched in this study, auto parts manufacturing companies, presents a peculiar context, in which the process of knowledge acquisition and assimilation (RACAP) is directly carried out, among other sources, with automakers. Usually, auto parts manufacturers have a very close direct contact with their customers (automakers), for example, these companies have a resident employee, working directly in the production units of the automakers, who has direct contact with the customer, bringing to the project team valuable knowledge for the development of innovation. In addition, component manufacturers hold systematic meetings with automakers, from which new knowledge and approaches are introduced to the project teams. On the other hand, the project performance, which deals with efficiency and effectiveness, that is, compliance with the scope, deadline and cost, was not directly impacted by PACAP. This result, in line with most previous studies (Ali & Park, 2016; Flor et al., 2018), shows that the activity of acquiring and assimilating external knowledge does not influence the managerial and control aspects of the project.

RACAP, in turn, had a positive direct impact on both project performance and innovation. This result is in line with previous studies (Ali & Park, 2016; Limaj & Bernroider, 2019; Popaitoon

& Siengthai, 2014; Rodríguez et al., 2014) regarding the relationship between RACAP and innovation, since the essential activity of project teams is the transformation and application of knowledge in order to achieve improvements and innovation. However, previous research has not investigated the relationship between RACAP and managerial performance of project teams. The results of this research indicate that RACAP has a direct and positive impact on project performance. The achievement of managerial goals, related to the project efficiency and effectiveness, depends on the ability of individuals of the project teams to apply the knowledge primary base or absorbed external knowledge in the development or revision of the activities that integrate the project. In this way, it is the role of the project team manager of auto parts manufacturing companies to mobilize and take advantage of the knowledge of its employees not only in the direction of the search for innovation, as verified in the results of this study and in previous research, but also in the sense of improve the way activities are performed in order to improve the scope of the project, and optimize time and cost.

Managerial contributions

The results of this study raise important practical implications for project managers and professionals. First, this study highlights the importance of absorption capacity for project success. While most studies focus on demonstrating how ACAP interferes in the organization's results, we point out that project team managers should also encourage the absorption of new knowledge. Second, according to our results, the ACAP dimensions (RACAP and PACAP) differently act on project performance and innovation. Thus, project managers and teams should note that whereas project innovation is directly impacted both by knowledge acquisition and assimilation processes (RACAP) and by the transformation and exploitation of knowledge (PACAP), project performance, which deals with project management aspects, including the compliance with scope, time, and cost, is directly impacted by RACAP.

Limitations and future research

This study has some limitations that should be addressed in future research. First, although the PLS-SEM technique is suitable for small samples, this study is limited to a small number of surveyed companies. Future research should consider larger samples and the inclusion of other sectors, for instance, the metal-mechanics industry or services, and analyze the behavior of the studied variables in these different sectors. Second, our sample is non-probabilistic and chosen for convenience with the Sindipeças catalogue. This type of sample can generate limitations regarding the generalization of results. Future research can access a larger spectrum of companies in a given sector, or even analyze ACAP in companies from different sectors. Third, the data collected in each assessed project team was based on the response of a single employee, which can lead to common method bias. Although our results did not present multicollinearity issues, future studies may consider the perspectives of different team employees, including managers

and members. Finally, generalization of the results of this study may be limited, as the sample of this research consisted of auto parts manufacturing companies in the automotive industry. Future research may consider the inclusion of companies from different sectors to increase the generalizability of results.

REFERENCES

Ali, A., Bahadur, W., Wang, N., Luqman, A., & Khan, A. N. (2020). Improving team innovation performance: Role of social media and team knowledge management capabilities. *Technology in Society*, *61*. https://doi.org/10.1016/j.techsoc.2020.101259

Ali, M., & Park, K. (2016). The mediating role of an innovative culture in the relationship between absorptive capacity and technical and non-technical innovation. *Journal of Business Research*, *69*(5), 1669-1675. https://doi.org/10.1016/j.jbusres.2015.10.036

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, *14*(3), 396-402. https://doi.org/10.1177/002224377701400320

Awe, O. A., Woodside, A. G., Nerur, S., & Prater, E. (2020). Capturing heterogeneities in orchestrating resources for accurately forecasting high (separately low) project management performance. *International Journal of Production Economics*, *224*. https://doi.org/10.1016/j.ijpe.2019.107556

Batarseh, F. S., Usher, J. M., & Daspit, J. J. (2017). Absorptive capacity in virtual teams: Examining the influence on diversity and innovation. *Journal of Knowledge Management*, *21*(6), 1342-1361. https://doi.org/10.1108/JKM-06-2016-0221

Benitez, J., Castillo, A., Llorens, J., & Braojos, J. (2017). IT-enabled knowledge ambidexterity and innovation performance in small US firms: The moderator role of social media capability. *Information Management*, *55*(1), 131-143. https://doi.org/10.1016/j.im.2017.09.004

Cadiz, D., Sawyer, J. E., & Griffith, T. L. (2009). Developing and validating field measurement scales for absorptive capacity and experienced community of practice. Educational and *Psychological Measurement*, *69*(6), 1035-1058. https://doi.org/10.1177/0013164409344494

Carrión, G. C., Navarro, J. G. C., & Jimenez, D. J. (2012). The effect of absorptive capacity on innovativeness: Context and information systems capability as catalysts. *British Journal of Management*, *23*(1), 110-129. http:doi.org/10.1111/j.1467-8551.2010.00725.x

Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares* (pp. 655-690). Springer.

Clark, K. B., Chew, W. B., & Fujimoto, T. (1987). Product development in the world auto industry. *Brook. Pap. Econ. Act.*, *3*, 729-771. https://doi.org/10.1016/0889-1583(92)90010-2

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, *35*, 128-152. https://doi.org/10.2307/2393553

Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. Univ. Akron Press.

Flor, M. L., Cooper, S. Y., & Oltra, M. J. (2018). External knowledge search, absorptive capacity and radical innovationin high-technology firms. *European Management Journal*, *36*(2), 183-194. http://doi.org/10.1016/j.emj.2017.08.003

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. https://doi.org/10.1177/002224378101800104

Garcia, N., Sanzo, M. J., & Trespalacios, J. A. (2008). *Effect of the interfunctional climate on internal and external new product performance: The moderator role of innovation type*. International Congress "Marketing Trends", Venice, Italy.

Gonzalez, R. V. D. (2021). Effects of learning culture and teamwork context on team performance mediated by dynamic capability. *Journal of Knowledge Management*, *25*(56), 2000-2021. https://doi.org/10.1108/JKM-05-2020-0385

Gonzalez, R. V. D., & Martins, M. F. (2014). Mapping the organizational factors that support knowledge management in the Brazilian automotive industry. *Journal of Knowledge Management*, *18*(1), 152-176. http://doi.org/10.1108/JKM-08-2013-0300

Gonzalez, R. V. D., & Melo, T. M. (2018). The effects of organization context on knowledge exploration and exploitation. *Journal of Business Research*, *90*, 215-225. https://doi.org/10.1016/j.jbusres.2018.05.025

Gonzalez, R. V. D., & Melo, T. M. (2019). Analyzing dynamic capability in teamwork. Journal of *Knowledge Management*, *23*(6), 1196-1217. http://dx.doi.org/10.1108/JKM-08-2018-0478

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, *17*(S2), 109-122. http://doi.org/10.1002/smj.4250171110

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2013). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications Ltd.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115-135. http://doi.org/10.1007/s11747-014-0403-8

Jansen, J. J. P., Bosch, F. Van den, & Volberda, H. (2005). Managing potential and realized absorptive capacity: How do organizational antecedents matter? *Academy of Management Journal*, *48*(6), 999-1015. http://doi.org/10.5465/AMJ.2005.19573106

Limaj, E., & Bernroider, E. W. N. (2019). The roles of absorptive capacity and cultural balance for exploratory and exploitative innovation in SMEs. *Journal of Business Research*, *94*, 137-153. https://doi.org/10.1016/j.jbusres.2017.10.052

Lin, C. P., Yang, Z. T., & Huang, H. T. (2016). Evaluating team performance and the mediating role of customer knowledge development: An absorptive capacity framework. *Journal of Engineering and Technology Management*, *42*, 46-64. http://10.1016/j.jengtecman.2016.10.001

Lowik, S., Kraaijenbrink, J., & Groen, A. (2016). The team absorptive capacity triad: A configurational study of individual, enabling, and motivating factors. *Journal of Knowledge Management*, *20*(5), 1083-1103. https://doi.org/10.1108/JKM-11-2015-0433

Mahmud, M., Soetanto, D., & Jack, S. (2020). Environmental management and product innovation: The moderating role of the dynamic capability of small manufacturing firms. *Journal of Cleaner Production*, *264*, 121633. https://doi.org/10.1016/j.jclepro.2020.121633

Popaitoon, S., & Siengthai, S. (2014). The moderating effect of human resource management practices on the relationship between knowledge absorptive capacity and project performance in project-oriented companies. *International Journal of Project Management*, *32*, 908-920. http://doi.org/10.1016/j.ijproman.2013.12.002

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879-891. http://doi.org/10.3758/BRM.40.3.879

Rodríguez, A. L. L., Roldán, J. L., Montes, J. A. A., & Millán, A. L. (2014). From potential absorptive capacity to innovation outcomes in project teams: The conditional mediating role of the realized absorptive capacity in a relational learning context. *International Journal of Project Management*, *32*(6), 894-907. https://doi.org/10.1016/j.ijproman.2014.01.005

Sánchez, A. M., Oliva, S. V., & Pérez, M. P. (2020). The relationship between R&D, the absorptive capacity of knowledge, human resourcef lexibility and innovation: Mediator effects on industrial firms. *Journal of Business Research*, *118*, 431-440. http://doi.org/10.1016/j.jbusres.2020.07.014

Tenenhaus, M., Vinzi, V. E., Chatelin, Y. M., & Lauro, C. (2005). PLS path modeling. *Computational Statistics & Data Analysis*, *48*(1), 159-205. https://doi.org/10.1016/j.csda.2004.03.005

Tjosvold, D., Tang, M. M., & West, M. (2004). Reflexivity for team innovation in China: The contribution of goal interdependence. *Group & Organization Management*, *29*(5), 540-559. https://doi.org/10.1177/1059601103254911

Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy Management Journal*, *44*(5), 996-1004. https://doi.org/10.2307/3069443

Walheiser, D., Schnews, C., Steinberg, P., & Cadogan, J. W. (2021). Greasing the wheels or blocking the path? Organizational structure, product innovativeness, and new product success. *Journal of Business Research*, *126*, 489-503. http://doi.org/10.1016/j.jbusres.2020.12.021

Wang, C. L., Senaratne, C., & Rafiq, M. (2015). Success traps, dynamic capabilities and firm performance. *British Journal of Management*, *26*(1), 26-44. https://doi.org/10.1111/1467-8551.12066

Xie, X., Zou, H., & Qi, G. (2018). Knowledge absorptive capacity and innovation performance in high-techcompanies: A multi-mediating analysis. *Journal of Business Research*, *88*, 289-297. http://doi.org/10.1016/j.jbusres.2018.01.019

Yang. L. R., Huang, C. F., & Hsu, T. J. (2014). Knowledge leadership to improve project and organizational performance. *International Journal of Project Management*, *32*(1), 40-53. http://doi.org/10.1016/j.ijproman.2013.01.011

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, *27*(2), 185-203. https://doi.org/10.5465/amr.2002.6587995

Zander, U., & Kogut, B. (1995). Knowledge and the speed of the transfer and imitation of organizational capabilities: An empirical test. *Organization Science*, *6*(1), 76-92. http:doi.org/10.1287/orsc.6.1.76

CONFLICTS OF INTEREST

The author have no conflicts of interest to declare.

AUTHORS' CONTRIBUTION

Rodrigo Valio Dominguez Gonzalez: Conceptualization, data curation, formal analysis, funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – proofreading and editing.

