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The Effects of Co-Workers' Psychological Capital in Knowledge Management Processes

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Inscription

A ti Pai, e às saudades que me fazem caminhar...

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Abstract

In 2002, Luthans suggested that organizational behavior's center of attention would be Positive Organizational Behavior (POB). Adopting the positive emotions as object of study, hope, resilience, Self-efficacy/trust and optimism were presented as POB' states that could represent a high superior order of configuration called Psychological Capital (PsyCap) (Avey et al., 2010). The application of positively oriented psychological and human resources skills leads to an increase in the co-workers' performance (Luthans et al., 2007^a), however, the relationship between Psychological Capital and Knowledge Management (KM) processes is still unknown. In this research thesis, we studied the effects of co-workers' PsyCap in KM processes in organizations and verified if any of the Psychological Capital dimensions moderates Knowledge Management processes. In order to do it, it was performed a descriptive and correlational analysis, a multiple regression analysis, a multiple multivariate regression analysis and a moderation analysis. The sample is made up of 1132 participants, of both genders, who have a bond of at least one year to an organization, in Portugal. The short form of the Knowledge Management Questionnaire (KMQ-SF, Pais, 2014) and the PsyCap questionnaire of Luthans et al. (2007) translated in Machado (2008) were used as measures. It was also realized that the factors of Psychological Capital influence the processes of Knowledge Management in the organization, since the analysis are significant and that there are three moderations effects between Hope, Self-efficacy and the Knowledge Management global scale; between Hope, Optimism and Knowledge-centered-culture and also between Hope, Self-efficacy and Formal-KM-practices.

Keywords: Knowledge Management, Positive Psychological Capital, Positive Organizational Behavior, Knowledge Management Questionnaire, PsyCap questionnaire

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Introduction

The current time requires a change of paradigm in organizational management, once we're facing an era where financial and technological factors are no longer seen as the only base of sustainability and main advantage of organizations (Tavares de Campos, 2013). Instead, other factors, like KM, are becoming more relevant and deserving visibility in the business research area. This is happening because knowledge is being considered as much important as any other tangible resource, with added value to management (Iqbal & Mahmood, 2012). Furthermore, there's an urgent need to invest in the Psychological Capital (PsyCap) of the employees so that organizations can achieve sustainability – which can only be accomplished by people, according to Luthans et al. (2007^a). Thus, the best place to work ceases to be one that promises a link for all life (once this is virtually nonexistent in today's job market) to be the one which gives opportunity and resources to co-workers' development. The relationship between PsyCap and KM is not well studied since our literature review gave scant results (Avey, Patera & West, 2006; Jian & Hanling, 2009; Abela & Zapata, 2012). Therefore, because we stand in a new organizational era where co-workers are the center of attention and knowledge as became so relevant for daily life, it seems to be relevant to study this relationship.

The present research thesis aims to verify the relationship between PsyCap factors and KM processes and, also, to verify if there are any moderations from PsyCap processes into KM processes. It's expected that the factors of co-workers' PsyCap influence the processes of KM in organizations and it is also expected that any of the PsyCap factors moderate the KM processes. This study is considered relevant since there's an essential and instrumental value on the PsyCap construct. It is considered on this research that there's an essential value that lies on the concepts of PsyCap – or at least, as far as it can be seen in the corporate society, PsyCap components (optimism, hope, resilience and Self-efficacy) are important to define quality of work-life, giving the concept the feature to be essential for the organizations. People with these characteristics are more likely to improve organizational results while they bring a work-life balance to the organization. Speaking of instrumental value, it can be said that PsyCap promotes KM processes, which means that it is probable that people oriented by PsyCap dimensions are able to improve KM processes in their work life. If the relationship of this study proves to be real, the individuals will be involved in different

knowledge-related organizational processes and therefore they'll be more updated and efficient, at the same time that they create a need of making their jobs part of a lifespan development. It's important, as well, for the organizations because co-workers will be more updated – bringing, sharing and developing knowledge that will become part of the sustainability of the company. Ultimately, this study also contributes to the society because if its members and organizations are more updated, they'll also be happier and more efficient, contributing to better results and additionally better quality of work life.

1. Literature Review

1.1. Knowledge Management

Knowledge Management has become popular in the literature since the 90s. In the past decades knowledge has been considered an important factor in organizations but only in the recent years it has been considered essential to organizations survival (Cardoso et al., 2011). There are many definitions of Knowledge Management. Numerous researches have been made and yet it continues to be a current theme. Davenport and Prusak (1998) holds one of the first definitions of the concept, being a pioneer in the topic: "a fluid mix of framed experience, values, contextual information and expert insights that provides a framework for evaluating and incorporating new experiences and information. It originates in and is applied in the minds of knower" (p. 5). However, we'll use the definition of Cardoso (2007): "The creation and development of internal organizational conditions that catalyze all the (sub) processes related with knowledge, in the way of the concretization of the organizational goals" (p. 45). The chosen definition is considered a modern one, since it associates knowledge and organizational goals, a topic that is becoming more and more important nowadays and that brings theory and practice together. It also mentions the sub processes of KM, which are relevant for the actual study of KM and for the present research, since the sub-processes are a crucial part of the concept and conclusions of this research. Cardoso's (2007) KM definition means that there's a process of transforming the things we know and we do into things that are worth and productive, as well as watching the power of key-knowledge that exists in the organization. The KM doesn't exist in isolation. It takes the rest of the organization to be part of it, to take part of the main role in the knowledge process (Cardoso et al., 2011). To perfectly understand the knowledge management process is necessary to be aware of the definition of knowledge.

Knowledge is a complex, dynamic and multidimensional combination of cognitive, emotional and behavioral elements, which is personally and socially built and its orientation to action makes it basal to the organizations' life (Monteiro & Cardoso, 2012). Polanyi (1966) divide knowledge into two different types: tacit and explicit. Tacit knowledge is the cumulative base of know-how that comes with the personal experience, which makes it context dependent. This knowledge is intangible, shapeless and not easily codified, meaning that implicit knowledge cannot be used without the person who has it and it cannot be communicated. Explicit knowledge is the opposite. It can be codified, kept in a single location and spread in time and space by and to different people. It's easy to communicate by using manuals or reports. These two kinds of knowledge coexist, once their individual existence doesn't make sense (Cardoso et al., 2011). Habitually, KM has been taken to a technology-driven perspective. Regardless the improvement of technology, which influences largely the KM processes, those perspectives fail because they ignore the people's issues related to KM. Therefore, presently, literature about KM has acknowledged the importance of social, cultural and human factors for the organization's development. Thereby, there's an improvement on the role of co-workers in KM processes and a higher interest in the people-driven perspective (Cardoso et al., 2011). Based on this assumption, Pais (2014) formulated a tetra factorial model. This model is made up of 4 factors (see table 1): the first one is Knowledge-centered-culture, the second one is Competitive-orientation, the third is Formal-KM-practices and the fourth one is Informal-KM-practices. It was used this 4 factor model because it is seen applicability to all of its factors, as well as relevance in the organizations daily life. Once it was decided which KM model we should use, the questionnaire that could give us support on that model was the Short Form of Knowledge Management Questionnaire (Pais, 2014).

Table 1 – Description of the 4 factor of tetra factorial model of KM (Pais, 2014)

4 factors of the tetra factorial model of KM	
Knowledge-centered-culture	It is the orientation for rules, norms and procedures that are establish in organizations. A common reference of a collective memory where it is preserved all the relevant knowledge.

Competitive-orientation	External orientation that is focus on the knowledge use for competitiveness – management of knowledge in a strategic way in order to achieve sustainability.
Formal-KM-practices	Formal processes that are relevant to know and use in order to create knowledge, being able to share and use it in that organization.
Informal-KM-practices	Informal processes that help in the social build of knowledge, emerging from the creation of a common and collective language in the organization.

1.2. Psychological Capital

Positive Psychology (PP) was a movement that was founded after the Second World War. It began to defend the adoption of an optimistic interpretative schema, with physical and psychological effects that could improve motivation (Fredrickson, 2003). The findings of the PP can be passed to the organizational field, since there was an awareness that a positive organizational environment could lead to positive effects on the co-workers and to organization's performance (Cunha et al., 2006). From the adaptation of PP to the organizational context, emerged two movements: Positive Organizational Scholarship (POS) and Positive Organizational Behavior (POB). The first one pretends to identify the dynamics that lead organizations and individuals to a high-level performance, in a macro level. The second one refers to positive individual abilities which are susceptible of development, measure and effectively managed in order to achieve a higher level of individual performance (Cameron and Caza, 2004; Luthans, 2002). The big difference between the two concepts is that POB is always capable of development, which makes it state-like. The same does not happen with POS, once it measure organizational processes taking place by positive relationships, which makes it capable of observation but not capable of development through training, for instance (Cameron 2003). Furthermore, POB gave path to the emergence of Positive Psychological Capital in the organizational field, with Luthans (2002) that found that certain positive abilities could represent a concept for itself. Therefore the author began

the study of POB in order to find a sustainable, evidence-based positive approach to the organizational behavior and human resource management. In order to find a construct that could represent this criterion, it was necessary a strong theoretical background, a valid measure and a construct that would be susceptible of development. On that way, after a deep review of the PP, the constructs that could dovetail in these criteria were found: Hope, Self-efficacy, Resilience and Optimism (Luthans, 2012). This means that these constructs are individually used in positive psychology, but in the organizational context they fit together into POB concept and once combined are called Positive Psychological Capital. This term supports that PsyCap lies beyond human and social capital which consists of “who you are” rather than “what or who you know” (Luthans et al., 2004^b).

Luthans and Youssef (2004^a) proposed the concept of Psychological Capital, with four factors that can be measured and developed. PsyCap was defined as:

An individual’s positive psychological state of development, characterized by: (1) having confidence (Self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success.

(Luthans, Youssef, & Avolio, 2007, p. 3)

Self-efficacy (Bandura, 1997) refers to people who believe in their ability to mobilize the motivation, cognitive resources and action necessary to have a successful task perform. It’s likely that an individual with high Self-efficacy chooses challenging tasks and perseveres in the face of obstacles and difficulties, rather than people with low Self-efficacy. Optimism (Carver and Scheier, 2003) refers to people who expect positive outcomes, who attribute positive events to internal, permanent and pervasive causes, and negative events to external, temporary ones. This means that they take credit for favorable situations in their lives and distance themselves from unfavorable events (diminishing the likelihood of depression, guilt, self-blame). Optimists are expected to formulate plans of action when facing difficulties. Hope (Snyder et al., 2002) is

composed of two components: agency and pathways. The first one refers to an individual's motivation to succeed at a specific task in a specific context and the second one refers to the way that the task can be consummate. People are motivated to achieve their goals expressing their sense of agency and expressing internalized determination and willpower to invest effort and energy in meeting their expectations. Those with higher levels of hope have greater goal direction and develop alternative pathways to accomplish their goals. At last, Resilience (Master and Reed, 2002) refers to the ability of an individual to deal with adversity, uncertainty, risk and failure, adapting to changes and stressful life demands. Individuals with high resilience tend to adapt positively towards negative experiences and changes in the external surroundings (Luthans & Youssef, 2004).

1.3. The role of Psychological Capital in Knowledge Management processes

Jan and Hanling (2009) realized that sharing and integration of knowledge can be associated to the existence of organizational socialization. They also find out that organizational socialization can happen because co-workers have high levels of PsyCap. The authors conclude that PsyCap is the mediator between organizational socialization and sharing and integration of knowledge in the organization.

Abella and Zapata (2011) studied the relationship between all the dimensions of PsyCap and the process of knowledge-sharing. The authors considered this research relevant once that Avey, Patera and West (2006) concluded that Self-efficacy has a positive influence in knowledge-sharing. As Self-efficacy is one of the four dimensions of PsyCap, Abella and Zapata (2011) considered reasonable to think that the relationship could be expanded to the all dimensions of PsyCap. In their research, the authors conclude exactly that - all dimensions of PsyCap influence the process of knowledge-sharing in an organization.

Despite these two researches, it was hard to find studies connecting PsyCap and KM. The two articles that we've found don't provide information about the direct relationship between PsyCap and KM processes because such relationship has never been proven. In 2008 Wang & Zhu made a bibliographic research also trying to find connections between these two concepts and found no results as well. PsyCap is already related to performance (Luthans et al., 2005), absenteeism (Avey et al., 2006), employability (Cole et al., 2009), satisfaction and commitment (Larson and Luthans,

2006), transformational leadership (Gooty et al., 2009). However, when we talk about the influence of PsyCap dimensions in KM processes we cannot say the same, because there are limited researches about it (Abella & Zapata, 2011; Jan & Hanling, 2009) and even the ones that exist don't measure the direct relationship between them, or the moderation effect of PsyCap in KM processes. In this research, we study this influence, once we believe that a developed Psychological Capital in the co-workers can be a facilitator to the growth of knowledge management in the organization. In a positively oriented organizational environment, knowledge has a huge opportunity to spread, to grow and to be a link between people. The importance of the KM within organizations has been growing truly fast, but that management depends totally on the way co-workers make it happen.

2. Objectives

In order to accomplish this research we have two different objectives. The first one is to study the effects of co-workers' Psychological Capital in Knowledge Management in organizations. The second objective has an exploratory character once, as far as we ascertain, there's no studies on this moderation effect. This exploratory moderation is viable since there are organizational variables that show this x,y,z effect, specific of moderations analysis (Wright and Bonett, 2002; Hoffmann et al., 2003; Shahid et al., 2005; Namasivayam and Zhao, 2007; Jansen et al., 2009; Probst and Estrada, 2010). Therefore, we determine as our second objective to explore if the factors of PsyCap can interact between them in the determination of KM processes.

3. Method

3.1. Sample

This is a non-experimental and transversal study. The sample is made up of 1132 participants who work in Portugal, with a bond of at least one year to an organization. The ages of the participants are located between 18 and 69 years old, with a mean (M) of 39.74 and a standard deviation (SD) of 11.21 years old. There are 39.5% male (n = 447) and 60.1% female (n = 680). The business sector most pointed was Other Profession with 25.8%. During the integration of the information in SPSS, it was visible that most of the participants did not understand in which business sector would fit their profession, explaining the big number of people pointing "Other Profession" as a

business sector. The more pointed on the others categories of the demographic data were Education and Science with 14.6%, and Human Health and Social Support with 12.4%. The less pointed was the Extractive Industry with 0.3%, and Real Estate Activities with 1.1% (n = 1122). Of all participants only 5.5% are entrepreneurs on their own, 66.3% have a contract of indefinite duration, and 64% are employees (n = 1126). However, all of the participants have a bond of at least one year in the organization. The major part of the participants (48%) has a monthly liquid salary between 501 and 1000 euro and the minor part (2%) have a salary between 3001 and 3500 euro and 3501 and 4000 euro (n = 1122). About 4% of the participants only know how to read and write, 18.2% have the basic education, 32.3% have the secondary school, and only 2.7% have a master degree (n = 1123). In terms of leadership, only 24.3% have a role of leadership (5.4% top leadership and 18.5% intermediate leadership), and 74.5% of them don't have a leadership role in the organization (n = 1120). At least, 30.3% work at organizations with 10 to 50 employees, and 20.8% work at organizations with 51 to 250 employees (n = 1123) (see appendix A4 – AT1).

3.2. Measures

In this research we used the Short Form of Knowledge Management Questionnaire with 22 items (KMQ-SF; Pais, 2014) and the Psychological Capital Questionnaire of Luthans et al. (2007), translated to Portuguese by Machado (2008) plus we add some sociodemographic questions.

The factorial validity of the questionnaires was valued by a confirmatory factor analyses with software AMOS (Arbuckle, 2008; 2009). The composite reliability and the medium extracted variance for each factor were evaluated as described in Fornell and Larcker (1981). The existence of outliers was measured by the square distance of Mahalanobis (Tabachnick & Fidell, 2007) and the normality of the variables was evaluated by the coefficients of asymmetry (Sk) and kurtosis (Ku) univariate and multivariate. None of the variables presented Sk and Ku values that could indicate violations of the normal distribution, once $|Sk| < 3$ and $|Ku| < 10$. The quality of the global adjustment of the factorial models was made by the X^2 , CFI, NFI, TLI, and RMSEA indexes, attending at the reference values (Bentler, 1999; Schumacker & Lomax, 1996; Brown, 2006; Kline, 2011; Hu & Bentler, 1999). The adjustment of the model was made by modification indexes (higher than 80, $p < .001$).

3.2.1. KMQ - SF – Short Form of Knowledge Management Questionnaire

The 22 item short of form of Knowledge Management Questionnaire (KMQ-SF; Pais, 2014) was used in the present investigation in order to identify and evaluate the perceptions of the co-workers about the different processes of organizational knowledge management and it's based on a Tetra-factorial Model. The first factor has 7 items and is designated by to Knowledge centered culture. The second one has 4 items and concerns to Competitive Orientation. The third factor is about Formal-KM-practices and it has 6 items. At last, the fourth factor has 5 items and it's about Informal-KM-practices (see appendix A1; Pais, 2014).

The items are presented in a Likert five point scale, in which 1 is Almost not applicable and 5 is Applicable most of the time (see appendix A5). The modification indexes made us correlate the residual variability between the variables 7 and 19, 14 and 17, and 16 and 18. The final Tetra-factorial Model of the KMQ-SF revealed an acceptable quality of adjustment, $X^2(200) = 1190.8$, $p < .001$; NFI = .888; CFI = .905, TLI = .890, and RMSEA = .067.

The internal consistency was estimated by the Alpha of Cronbach's coefficient. The global scale presented a high coefficient of consistency, $\alpha = .913$. The first factor – Knowledge-centered-culture- presents a coefficient of .831. The second factor - Competitive-orientation - exhibit a coefficient of .806 and the third one - Formal-KM-practices - shows a coefficient of .815. The last one - Informal-KM-practices - has a coefficient of .779, acceptable according to Nunally (1978). In appendix A5 is possible to see the Tetra-Factorial Model of the factorial validation of the Knowledge Management Questionnaire.

3.2.2. PsyCap Questionnaire

The Positive Psychological Capital questionnaire developed by Luthans et al (2007^b) translated to Portuguese by Machado (2008) is used to the organizational context. This instrument has 24 items, six for each dimension of Psychological Capital (Hope, Optimism, Self-efficacy and Resilience). The questionnaires have 3 invert items, which are: CP13i - When I've a setback at work, I've difficulty in recovering and moving on; CP20i - If something bad can happen to me at work, it will happen; and CP23i - At work, things never run as I would like. The participants should register their level of agreement or disagreement in a six-point Likert scale in which 1 is Strongly

disagree, and 6 is Strongly agree (see appendix A2; Luthans et al. 2007^b). The instrument was adapted to a Portuguese context in 2008, by Machado (2008). The tetra-factorial model of PsyCap (see appendix A6) with 24 items reveal a good quality of adjustment $\chi^2(242) = 887.8$, $p < .001$, CFI = .941, NFI = .921, TLI = .932, and RMSEA = .049. By the indexes of modification were correlated the residual variability of items 2 and 3, 10 and 12, 13 and 20, 20 and 23 as we can see in appendix A6.

The internal consistency was estimated by the Alpha of Cronbach's coefficient. For the global scale (Fig. 2) we have obtained an $\alpha = .908$. The first factor (F1 - Self-Efficacy/Trust) presents $\alpha = .844$; the second one (F2 - Hope) shows $\alpha = .821$; the third factor (F3 - Resilience) has $\alpha = .736$ and, at last, the fourth factor (F4 - Optimism) presents a $\alpha = .656$. Although the last two factors present low coefficients, we can consider that the scale shows an acceptable reliability index (Nunally, 1978).

3.3. Procedures

All the care was taken to ensure participant's anonymity and to ensure the confidentiality of the data, so that the answers were not skewed. All the formal and ethical situations were taken into account in this work. The data was collected under an investigation project accomplished in a subject named Methodology of Investigation, with the contribution of students of the Integrated Master's Degree in Psychology, Educational Sciences, Social Service and Educational Sciences Master's Degree from the University of Coimbra and also from the University of Evora. The students' involvement helped us to spread the questionnaires and reach as many professionals as possible. There were explanatory sessions about the purpose of this research work and the procedures on how to apply the questionnaires, in which conditions to each people, in order to keep the reliability of the data. Each of the students distributed minimum of 3 and maximum of 10 questionnaires to co-workers from different parts of Portugal in different professional occupation. There were no organizations involved in the project of research; the questionnaires were fulfilled by co-workers from different places of the country and different organizations, without any relation between them. Furthermore, participants filled the questionnaires in paper and individually and gave their written consent. The compilation of the data was made between December of 2013 and February of 2014. The results will be presented to the participants that showed interested, by e-mail.

3.4. Data Analysis

In this research, we used a descriptive and correlational analysis of the global scale and the analysis of the factors of each scale (Short Form of Knowledge Management Questionnaire and PsyCap questionnaire). We also did a multiple regression in which we can predict the KM in the organizations from the co-workers' PsyCap and a moderation analysis to verify if any of the PsyCap variables is a moderator of the KM processes. All the analyses were made in the statistical program SPSS 20.0 (Statistical Package for the Social Sciences) and IBM SPSS Amos 20.0 (Analysis of Moment Structures), for the operative system Windows.

4. Results

4.1. Descriptive Analysis and correlation between Psychological Capital and Knowledge Management

Table 2 – Descriptive statistics and correlation matrix between Psychological Capital and Knowledge Management

	Min	Max	M	SD	KM_F1	KM_F2	KM_F3	KM_F4	KM_GL	PC_F1	PC_F2	PC_F3	PC_F4	PC_GL
KM_F1	1.00	5.00	3.92	.63	1	.53**	.61**	.68**	---	.42**	.42**	.37**	.35**	.47**
KM_F2	1.00	5.00	3.42	.93		1	.46**	.43**	---	.27**	.26**	.18**	.18**	.34**
KM_F3	1.00	5.00	3.17	.88			1	.60**	---	.33**	.32**	.19**	.27**	.34**
KM_F4	1.00	5.00	3.67	.76				1	---	.28**	.27**	.23**	.23**	.30**
KM_GL	1.00	5.00	3.57	.64					1	.40**	.39**	.30**	.32**	.43**
PC_F1	1.33	6.00	4.68	.75						1	.66**	.57**	.51**	---
PC_F2	1.50	6.00	4.57	.78							1	.60**	.58**	---
PC_F3	2.50	6.00	4.55	.69								1	.58**	---
PC_F4	1.83	6.00	4.31	.70									1	---
PC_GL	2.33	6.00	4.59	.61										1

* p<.05 ** p<.01 *** p<.001

Legend: KM_F1: Knowledge-centered-culture; KM_F2: Competitive-orientation; KM_F3: Formal-KM-practices; KM_F4: Informal-KM-practices; KM_GL: Global scale of Knowledge Management. PC_F1: Self-efficacy; PC_F2: Hope; PC_F3: Resilience; PC_F4: Optimism; PC_GL: Global Scale of Psychological Capital.

The Table 2 illustrates the descriptive statistics and the correlation matrix between Knowledge Management and Psychological Capital. It was verified that the KM processes that were more appointed by co-workers were: Knowledge-centered-culture (M = 3.92), followed by Informal-KM-practices (M = 3.67), Competitive-orientation (M = 3.42) and, finally, Formal-KM-practices (M = 3.17). The most

appointed PsyCap factor was Self-efficacy ($M = 4.68$) followed by Hope ($M = 4.57$), Resilience ($M = 4.55$), and Optimism ($M = 4.31$).

The effect size of the relations between KM factors and PsyCap factors are moderate and positive ($r > .243$; Cohen, 1988), except for higher correlations as KM global scale and PsyCap global scale ($r = .43$), as well as KM global scale with Self-efficacy ($r = .40$) and Hope ($r = .39$). Higher correlations were also found between Knowledge-centered-culture and Self Efficacy ($r = .42$), Hope ($r = .42$), Resilience ($r = .37$) and, finally, Knowledge-centered-culture with Psycap global scale ($r = .47$) (Cohen, 1988). On the other hand, we found weak effect size on relations between Competitive orientation, Hope ($r = .18$) and Resilience ($r = .18$) and also between the Formal-KM-practices and Resilience ($r = .19$) and, at last, between Informal-KM-practices with Resilience ($r = .24$).

4.2.2. Multiple regression analysis of Knowledge Management forecast from the four factors of Psychological Capital

A Multiple Regression analysis was made, considering the four factors of Psychological Capital as predictors variables and the global scale of Knowledge Management and each of it factors as criterion variables. Previously it was analyzed the assumptions of the model, namely normal distribution, homogeneity and errors independence. The two first assumptions were graphically validated and the errors independence were validated by the Durbin-Watson statistic. VIF was used to see multicollinearity and none of the variables appear to be collinear. All the analysis were made with SPSS Statistics (V. 20, IBM SPSS; Chigago, IL).

Table 3 – Multiple regression analysis of Knowledge Management forecast from the four factors of Psychological Capital: non-standardized (*b*) and standardized (β), regression weights standard errors (*SE*) and *t* tests of statistical significance

Knowledge Management (KM)						
Psychological Capital (PC)	Criterion: Global scale					
	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>R</i>	<i>F</i> (4, 1112)
Predictors:						
<i>PC_F 1 Self-efficacy</i>	.20	.03	.24	6.26***	<i>R</i> = .441 <i>R</i> ² = .195 <i>R</i> ² _{adj} = .192 <i>SE</i> = .576	67.28***
<i>PC_F 2 Hope</i>	.15	.03	.18	4.46***		
<i>PC_F 3 Resilience</i>	.00	.03	.00	0.10		
<i>PC_F 4 Optimism</i>	.09	.03	.09	2.60**		
	Criterion: KM_F1 – Knowledge-centered-culture					
Predictors:	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>R</i>	<i>F</i> (4, 1112)
<i>PC_F 1 Self-efficacy</i>	.17	.03	.20	5.42***	<i>R</i> = .474 <i>R</i> ² = .224 <i>R</i> ² _{adj} = .222 <i>SE</i> = .556	80.393***
<i>PC_F 2 Hope</i>	.13	.03	.17	4.23***		
<i>PC_F 3 Resilience</i>	.10	.03	.11	2.96***		
<i>PC_F 4 Optimism</i>	.08	.03	.09	2.60**		
	Criterion: KM_F2 – Competitive-Oriented					
Predictors:	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>R</i>	<i>F</i> (4, 1112)
<i>PC_F 1 Self-efficacy</i>	.21	.05	.17	4.24***	<i>R</i> = .290 <i>R</i> ² = .084 <i>R</i> ² _{adj} = .081 <i>SE</i> = .891	25.614***
<i>PC_F 2 Hope</i>	.18	.05	.15	3.51***		
<i>PC_F 3 Resilience</i>	-.02	.05	-.01	-0.29		
<i>PC_F 4 Optimism</i>	.01	.05	.01	0.28		
	Criterion: KM_F3 – Formal-KM-Practices					
Predictors:	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>R</i>	<i>F</i> (4, 1112)
<i>PC_F 1 Self-efficacy</i>	.27	.05	.23	5.82***	<i>R</i> = .372 <i>R</i> ² = .138 <i>R</i> ² _{adj} = .135 <i>SE</i> = .822	44.649***
<i>PC_F 2 Hope</i>	.18	.05	.16	3.76***		
<i>PC_F 3 Resilience</i>	-.13	.05	-.10	-2.67**		
<i>PC_F 4 Optimism</i>	.16	.05	.12	3.34**		
	Criterion: KM_F4 – Informal-KM-Practices					
Predictors:	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>R</i>	<i>F</i> (4, 1112)
<i>PC_F 1 Self-efficacy</i>	.16	.04	.16	4.00***	<i>R</i> = .309 <i>R</i> ² = .096 <i>R</i> ² _{adj} = .092 <i>SE</i> = .072	29.386***
<i>PC_F 2 Hope</i>	.10	.04	.11	2.50*		
<i>PC_F 3 Resilience</i>	.05	.04	.04	1.10		
<i>PC_F 4 Optimism</i>	.06	.04	.06	1.51		

* *p* < .05 ** *p* < .01 *** *p* < .001

Legend: KM_F1: Knowledge-centered-culture; KM_F2: Competitive-orientation; KM_F3: Formal-KM-Practices; KM_F4: Informal-KM-Practices; KM_GL: Global scale of Knowledge Management. PC_F1: Self-efficacy; PC_F2: Hope; PC_F3: Resilience; PC_F4: Optimism; PC_GL: Global Scale of Psychological Capital.

In this analysis, it is possible to conclude that Self-efficacy and Hope have a strong effect in all factors of KM, which can mean that co-workers who are self-efficient and hopeful are more directed to perceive processes of KM in the organization. On the other hand, optimistic and resilient co-workers have more difficulty to perceive KM processes in the organization, being the resilient ones only able to perceive Knowledge-centered-culture positively and formal-KM-practices negatively.

In the multiple regression carried out with the four factors of PsyCap (PC_F1 – Self-efficacy; PC_F2 – Hope; PC_F3 – Resilience and PC_F4 – Optimism) and the KM global scale we can see that the PsyCap factors are responsible for 19,5% of the variability of the KM global scale (see *Table 3*), due to Self-efficacy, Hope and Optimism once Resilience did not predict the KM global scale. It was also seen that Self-efficacy is the higher predictor of all the factors of KM (Formal-KM-practices: $\beta = .23$; Knowledge-centered-culture: $\beta = .20$; Competitive-orientation: $\beta = .17$ and Informal-KM-practices: $\beta = .16$). On the other hand, Resilience does not predict Competitive-orientation and Informal-KM-practices, but it positively predicts Knowledge-centered-culture and negatively Formal-KM-practices (Knowledge-centered-culture: $\beta = .11$; Informal-KM-practices: $\beta = .04$; Competitive-orientation: $\beta = -.01$ and Formal-KM-practices: $\beta = -.10$).

PsyCap factors are responsible for 22.4% of Knowledge-centered-culture in an organization. All PsyCap factors showed to be significant, although resilience has a low value of .11. It was also seen that PsyCap factors are responsible for 8.1% of Competitive-orientation in an organization and for 13,8% of Formal-KM-practices. In this factor Resilience has a significant negative value of $-.10$, which means that co-workers who are more resilient have more difficulty to perceive formal-KM-practices in the organization. Regarding to Informal-KM-practices, PsyCap predicts 9,6% of the KM factor.

4.2.1. Multiple multivariate regression analysis model between Psychological Capital and Knowledge Management

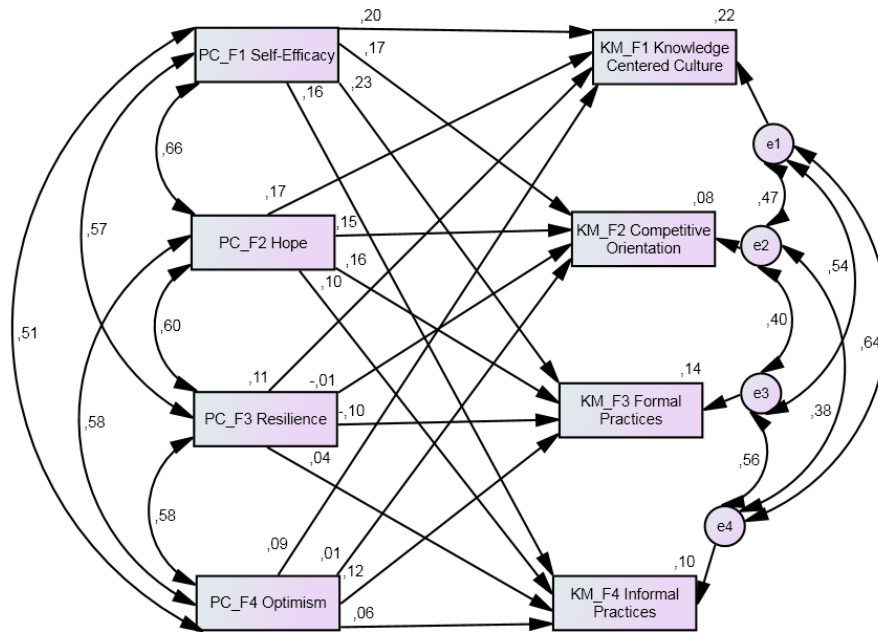


Figure 1 – Multiple multivariate regression analysis model between Psychological Capital factors and Knowledge Management factors

Table 4 – Multiple multivariate regression analysis: Non-standardized Regression Coefficients (b); Standard-Errors (S.E.), Critical Ratios (C.R.) and Standardized Regression Weights (β)

			b	S.E.	C.R.	β
KM_F1	<---	PC_F1	.168	.031	5.431	.200***
KM_F4	<---	PC_F3	.047	.043	1.099	.043
KM_F2	<---	PC_F4	.014	.051	.279	.011
KM_F2	<---	PC_F1	.211	.050	4.250	.170***
KM_F2	<---	PC_F2	.177	.050	3.516	.149***
KM_F2	<---	PC_F3	-.015	.053	-.293	-.012
KM_F3	<---	PC_F4	.157	.047	3.341	.123***
KM_F1	<---	PC_F4	.082	.032	2.601	.091**

			b	S.E.	C.R.	β
KM_F1	<---	PC_F3	.097	.033	2.963	.107**
KM_F1	<---	PC_F2	.133	.031	4.238	.166***
KM_F3	<---	PC_F1	.267	.046	5.826	.227***
KM_F3	<---	PC_F3	-.130	.049	-2.676	-.102**
KM_F3	<---	PC_F2	.175	.046	3.765	.155***
KM_F4	<---	PC_F4	.063	.041	1.515	.057
KM_F4	<---	PC_F1	.161	.040	3.985	.159***
KM_F4	<---	PC_F2	.102	.041	2.487	.105*

*** p<.001 ** p<.01 * p<.05

Legend: KM_F1: Knowledge-centered-culture; KM_F2: Competitive-orientation; KM_F3: Formal-KM-practices; KM_F4: Informal-KM-practices; KM_GL: Global scale of Knowledge Management. PC_F1: Self-efficacy; PC_F2: Hope; PC_F3: Resilience; PC_F4: Optimism; PC_GL: Global Scale of Psychological Capital.

It was made a multiple multivariate regression analysis between the variables Psychological Capital and Knowledge Management. The significance of the regression coefficients was evaluated after parameter estimation by the maxim likelihood implemented by AMOS (v. 19, SPSS Inc, Chicago, IL). The square distance of Mahalanobis evaluated the existence of outliers and the coefficients of asymmetry (Sk) and kurtosis (Ku) uni and multivariate assessed the normality of the variables. None of the variables presented values of Sk and Ku that indicated severe violations of the normal distribution. VIF were calculated with SPSS Statistics (v. 20.0, SPSS, INC) and none of the variables presented VIF that indicated multicollinearity. Are consider statically significant the effects with p<.05.

As shown in figure 1 and table 4, and confirming the regression analysis, Psychological Capital has significant results in Knowledge Management. According to Cohen's (1988) reference values for the effect size of standardized regression coefficients, there is one null effect between Optimism and Knowledge-centered-culture ($\beta = .091$) and there also is a moderate effect between Self-efficacy and Formal-KM-practices ($\beta = .227$). The rest of the significant values show a low effect size, being the higher values on this group, Self – efficacy with Knowledge-centered-culture ($\beta = .20$), followed by Self-efficacy with Competitive-orientation ($\beta = .17$) and, finally, Hope with Knowledge-centered-culture ($\beta = .166$).

4.2.1. Moderation analysis between Psychological Capital and Knowledge Management

In the present research, we analyzed the moderation effect through the multiple regression technique. We've made an analysis with centered independent variables, instead of using the original independent variables. Thereby, it was possible to avoid collinearity problems between the independent variables (Aiken & West, 1991; Maroco, 2007). In order to test the moderation effect, we've inserted in the regression equation the product of two independent variables centered to the regression model. By doing it, we could test the interaction effect and evaluate its statistical significance. We've found three significant moderations.

Table 5 – Moderation analysis between Self-efficacy and Hope, in the prediction of Knowledge Management Global scale: non-standardized (b) and standardized (β) regression weights, standard errors (SE) and t tests of statistical significance

Variables	B	SE	β	t	p
Self-efficacy	.15	.02	.24	6.26	.00
Hope	.11	.03	.12	4.46	.00
Resilience	.00	.02	.00	.10	.92
Optimism	.06	.02	.09	2.60	.01
Self-efficacy x Hope	.05	.02	.01	2.13	.03
R = .45, R ² = .20, R ² _{adj} = .20, SE = .58					
F(10, 1106) = 27.97, p < .001					

As it can be seen in table 5, the analysis of the correlation coefficient associated to the product of two independent variables allow us to conclude that there is a significant interaction (p = .03) between Self-efficacy and the KM global scale. In other words, Hope moderates the relation between Self-efficacy and KM global scale. The model is significant and explains 20% of the variability in KM global scale, meaning that Self-efficacy and Hope interact with each other on the prediction of KM global scale.

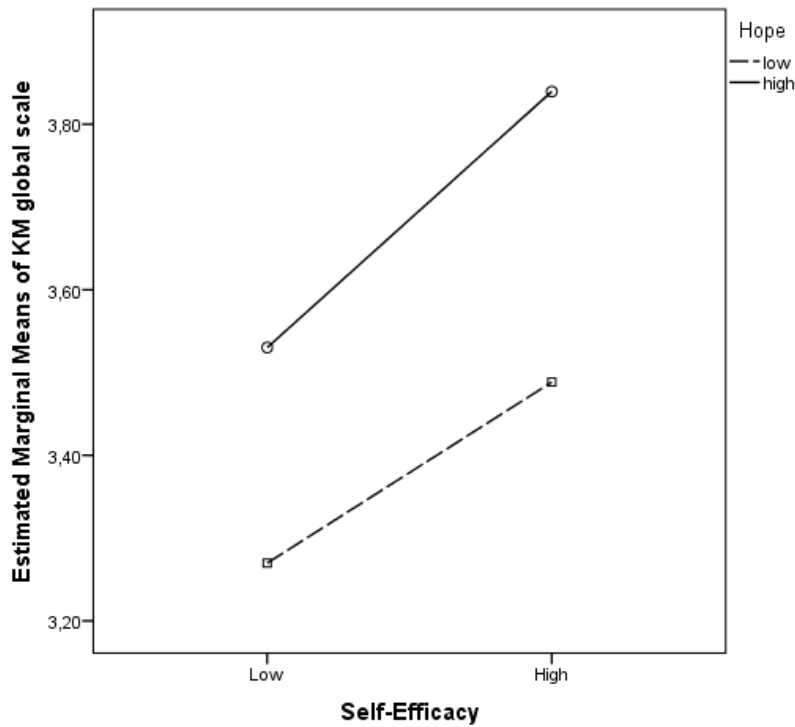


Figure 2 – Moderation between Self-efficacy and Hope, in the prediction of Knowledge Management Global scale

Examining the interaction plot (Figure 2), it can be seen that co-workers with a higher Hope perceive more KM global scale than the ones with low hope. The same happens to co-workers with high Self-efficacy – they perceive more KM global scale than the ones with low Self-efficacy. Therefore, it can also be said that KM global scale is higher when Self-efficacy and Hope have high values. Due to the interaction effect, once Self-efficacy has high values, co-workers with high values of Hope are able to perceive more KM global scale. Nevertheless, once Self-efficacy is low, co-workers with low values of Hope tends to perceive more KM global scale. This interaction is weak ($p = .03$) and the lines of the graphic are almost parallels.

Table 6 – Moderation between Self-efficacy and Hope, in the prediction of Knowledge-centered-culture: non-standardized (*b*) and standardized (β) regression weights, standard errors (*SE*) and *t* tests of statistical significance

Variable	B	SE	β	<i>t</i>	p
Self-efficacy	.13	.02	.20	5.42	.00
Hope	.10	.03	.17	4.23	.00
Resilience	.07	.02	.12	3.00	.00
Optimism	.06	.02	.09	2.56	.01
Hope x Optimism	.05	.02	.04	.83	.04

R = .48, R² = .23, R²_{adj} = .22, SE = .56
F(10, 1106) = 33.03, P<.01

As it can be seen in table 6, the analysis of the correlation coefficient associated to the product of two independent variables allow us to conclude that there is a significant interaction between Hope and the Knowledge-centered-culture, although that interaction is weak ($p = .04$). On the other hand, Hope and Optimism together interact in the prediction of Knowledge-centered-culture. The model is significant and explains 23% of the variability in Knowledge-centered-culture.

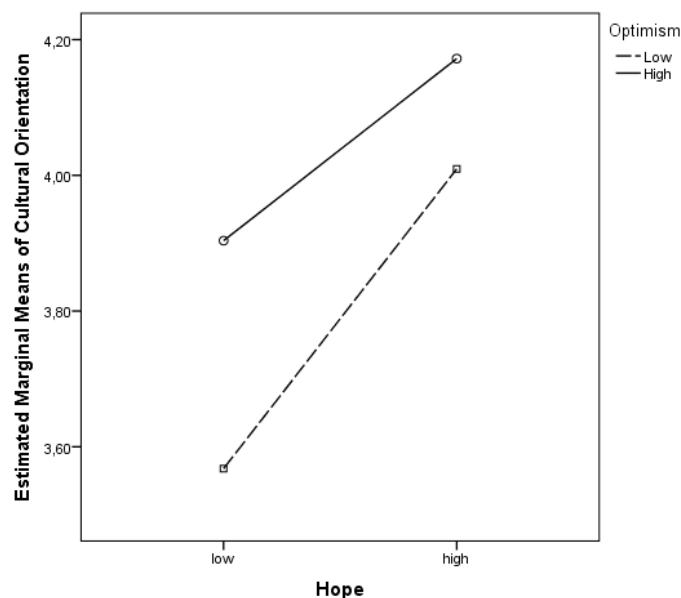


Figure 3 – Moderation between Self-efficacy and Hope, in the prediction of Knowledge-centered-culture

Examining the interaction plot (Figure 3), it can be seen that co-workers with a higher Optimism perceive more Knowledge-centered-culture than the ones with low Optimism. The same happens to co-workers with high Hope – they perceive more Knowledge-centered-culture than the ones with low Hope. It can also be said that Knowledge-centered-culture is higher when Hope and Optimism are higher. Due to the interaction effect, we should pay attention that once Hope has high values, co-workers with low values of Optimism are able to perceive more Knowledge-centered-culture. However, once Hope is low, co-workers with high values of Optimism tends to perceive more Knowledge-centered-culture.

Table 7 – Moderation between Self-efficacy and Hope, in the prediction of Formal-KM-practices: non-standardized (b) and standardized (β), regression weights, standard errors (SE) and t tests of statistical significance

Variable	B	SE	β	t	p
Self-efficacy	.20	.03	.23	5.82	.00
Hope	.14	.04	.15	3.76	.00
Resilience	-.09	.03	-.10	-2.67	.01
Optimism	.11	.03	.12	3.34	.00
Self-efficacy x Hope	.08	.03	.12	2.62	.01

R = .39, R² = .15, R²_{adj} = .14, SE = .82
F(10, 1106) =19.77, p<.01

As it can be seen in table 7, there is a significant interaction (p = .01) between Self-efficacy and Formal practices of KM. In other words, Self-efficacy and Hope interact with each other in the prediction of Formal-KM-practices. The model is significant and explains 15% of the variability in Formal-KM-practices.

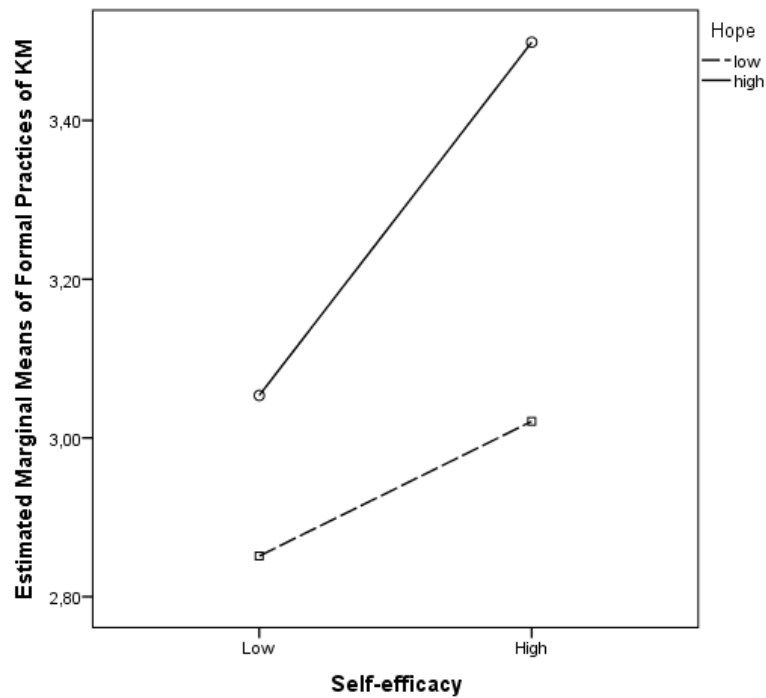


Figure 5 – Moderation between Self-efficacy and Hope, in the prediction of Formal-KM-practices

Examining the interaction plot (figure 5), it can be seen that co-workers with a higher Hope perceive more Formal-KM-practices than the ones with low Hope. The same happens to co-workers with high Self-efficacy – they perceive more Formal-KM-practices than the ones with low Self-efficacy. It can also be said that Formal-KM-practices is higher when Hope and Self-efficacy have high values. Due to the interaction effect, once Self-efficacy has high values, co-workers with high values of Hope are able to perceive more Formal-KM-practices. Nevertheless, once Self-efficacy is low, co-workers with low values of Hope tends to perceive more Formal-KM-practices.

5. Discussion and Conclusions

It was seen previously that KM and PsyCap are two essential variables in the organizational field. In KM lies the capacity of an organization to create, spread and integrate new knowledge in processes, products and services (Cardoso, 2003; 2007). Therefore, all the actions that lead to the use of that knowledge are crucial to the management success (Pais, 2014). On the other hand, co-workers' PsyCap can be considered a productive investment in order to organizations achieve sustainability (Luthans et al., 2007^a) once the positive constructs that it contains are crucial for organizational performance. Nowadays, co-workers are getting more valuable due to the emerging thinking of getting higher values of performance through positive factors (Luthans, 2004). Since knowledge became more important than any other resource in the organizations (Iqbal & Mahmood, 2012), and co-workers' PsyCap became a good investment for its future, it seemed relevant to carry out a study where the interaction between these two variables could be understood. Therefore, this research had two main objectives: the first one was to explore if co-workers' PsyCap have an impact on KM processes for which we used a correlation matrix, a multiple regression analyses and a multiple multivariate regression analysis. The second one was to explore the moderation effect of any PsyCap variables in KM dimensions. In order to reach the last objective, we performed a moderation analyses between the variables. As far as we could ascertain, this is the first study that test the relationship between the two constructs and that verifies the moderation effect between PsyCap factor and KM processes. The results presented above showed that it was possible to accomplish the objectives of the research.

Regarding to the first objective of the study, we can see that co-workers' Psychological Capital has influence on Knowledge Management processes. We can affirm this because our sample's analyses gave us enough information through the correlation matrix to see that there's a moderate effect of PsyCap factors in KM processes, and also to determine through the multiple regression analyses that PsyCap factors predict 19.5% of KM processes. In these analyses, we can also observe that Self-efficacy and Hope have a strong role on the prediction of all KM processes – being Self-efficacy the most significant one. Resilience and optimism are the dimensions with weaker impact on KM – being resilience the most significant one. This means that co-workers that consider themselves self-efficient and hopeful are more likely to perceive

KM processes as operant in the organization instead of the co-workers who consider themselves resilient and optimistic who are less likely to perceive KM processes. It is also important to emphasize that Self-efficacy has higher values once it is combined with Knowledge-centered-culture or when combined with Formal-KM-practices. On the opposite, Resilience finds a negative prediction with Informal-KM-practices. The effects of Self-efficacy on Knowledge-centered-culture can be explained by the fact that co-workers who feel self-efficient are more likely to share, use and spread knowledge they have. As they see themselves as self-efficient, they must feel more comfortable on the transmission of their knowledge, contributing to the Knowledge-centered-culture. On the other hand, they probably use knowledge from others and from the organization in order to perform their jobs and achieve their professional goals, which make them likely to perceive Knowledge-centered-culture in the organization. Concerning the effects of Self-efficacy on Formal-KM-practices it can be explained because people with a strong Self-efficacy are more able to sustain and consolidate the Formal-KM-practices that have been established in the organization. We can also add that self-efficient co-workers must use all the Formal-KM-practices in order to make themselves more productive and assertive, which contributes to a higher perception of Formal-KM-practices. About Resilience, co-workers who have the capacity to overcome adversities do not see Formal-KM-practices, once they probably pass a long time of their work life trying to overcome negative situations. They don't perceive Formal-KM-practices probably because they're dealing with situations that put them into some difficulties, which will act as a conditioner. Resilient co-workers are able to perceive Knowledge-centered-culture and maybe that is explained by the fact that they feel part of the cultural process of the organization, but don't feel like having the time to worry about KM issues. Finally, it is possible to say, by the multiple multivariate regression analyses that it's in Knowledge-centered-culture that PsyCap has its presence more highlighted. It can be explained by the fact that Self-efficacy, Hope, Resilience and Optimism are constructs that can be measured and developed (Luthans, 2002). An organization might be the place where that development happens, with the help of all the organizations actors, which means that self-efficient, hopeful, resilient and optimistic co-workers can be the guiding line of a Knowledge-centered-culture to knowledge.

Concerning to the second objective of the study - verify the moderation effect of any PsyCap variables in KM processes – we've found three moderated effects that are significant. Despite two of them are weak, the main effect of the two-predictor variables prevails: Hope and Optimism; Hope and Self-efficacy. It is already known that people who see themselves as more self-efficient are more likely to perceive KM processes in the organization. Following that thought, we've discover that Hope and Optimism interact in the prediction of Knowledge-centered-culture. It is also known that people who consider themselves self-efficient and hopeful perceive more Formal-KM-practices in the organization. On that consideration, we've found that Hope and Self-efficacy interact in the prediction of Formal practices of KM. On other words, in the analysis of the variables and their influence in the processes of KM, we have to take into account their interaction, the possibility of their combination, in the same subject, in order to realize if they create combine levels of PsyCap factors that, once combine, interact to KM processes. The prediction of KM by PsyCap factors is not a straightforward process since there is the need to analyze the possible combinations of PsyCap factors in the same subject and see how they interact and combine in the estimation of KM processes.

6. Practical Implications

It is well known by scientists and practitioners that organizations must have a environment that promote a culture where co-workers are able to experience quality of work-life, work-life balance and a full professional experience. Day after day it is a business core concern to give tools that improve the happiness of their human capital. This is fundamental to improve PsyCap processes and their recognition, as well as to improve creation, identification and sharing of knowledge into the organization, as we could see in this research. For instance, if we look deeply into a company, it is possible to see Self-efficacy in performance processes. A self-efficient co-worker is the one that is confident about what is doing and therefore is capable to develop his performance. Those are the ones that create the knowledge culture, that are able to create rules, norms, and histories of how knowledge spreads in that specific company. Self-efficient co-workers pass that culture to the new ones, having the role of creating a knowledge image that will prevail. It can also be said that self-efficient people are able to see Formal-KM-practices for the exactly same reason. Formal practices are part of the culture. If a culture of knowledge exists, probably exists a formal management of that knowledge – trough intranet, trainings, mentoring. Self-efficient people know what they

are capable of when related to knowledge, but also are familiar to KM tools and can show them to others. On the other hand, Resilient people are overlapped to achieve their goals through adversity. Although they are considered to be people with a good skill for the organizations, they are not able to see processes in their own company that would be important for their professional development. Co-workers with high resilience have problems to see social building of knowledge, such as the way to spread information outside knowledge tools.

PsyCap factors can combine between them to predict KM processes, which in practical terms means that people that are self-efficient, resilient, hopeful and optimistic can see knowledge in many ways, being able to improve their abilities, help other co-workers and build knowledge and ways of keeping it in the company. It is, therefore, crucial for the organizations to find ways to improve their co-worker's PsyCap. It can be done through recognition of their work in the moment, showing how they are being notice and useful for the business; involving people on processes since the beginning of the decision, showing them the security of the company and the skills of their leaders; giving responsibility to co-workers, showing trust and respect. It only takes a few relevant practices to create the tools to develop PsyCap in co-workers. Thereby, it is possible for people to become comfortable with KM processes' implementations, becoming themselves part of the project without even notice.

7. Limitations and further research

As it is expected, this research has some limitations since there are a lot of issues that can influence the results. In this specific study there are four limitations that have to be highlighted. The first one is related to the use of questionnaires because they might not be faithful to feelings, emotions and states of mind. It isn't easy to measure subjective dimensions as those of the PsyCap (Tavares de Campos, 2013) or KM. The second one, it would also be more trustful to do a longitudinal study. First of all because the development capability of the PsyCap construct, which can change over times, making differences in the co-worker's perception of KM processes; in second place because it would give the correct idea of the relationship between PsyCap and KM and if this relation is only one way or if it work the two ways around. Furthermore, a longitudinal study would give more information on the role of each PsyCap construct

alone into KM processes. The third limitation is related to the fact that it could have been detailed the relations between PsyCap factors, since this is a well studied topic. It was not made in order to keep the focus on the relation between the constructs. Finally, the four and last limitation is about the human error on the process of inserting data. Even that all the care was taken, errors might occur from that process.

In this study we are dealing with relations that are unexplored, which means that there are too little references where we could base our conclusions on. This can be a limitation but it is also a trigger to further research. For the future, we suggest an association with sociodemographic data, once the perception of KM processes trough PsyCap factors might change with gender, age, company or profession itself. Additionally, we also would like to suggest the possibility of making this study only with organizations' leaders and then compare it to non-leaders, once leadership can change the vision of people about their Self-efficacy, Hope, Resilience and Optimism, having implications on the perception of KM processes. Lastly, we would like to propose the categorization of co-workers according to different combinations of POB states (eg. Low, medium, high POB) and then relate it to the co-workers' perception of KM.

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Appendix

A1: Short-Form of Knowledge Management Questionnaire (Pais, 2014)

4 Apresentamos-lhe de seguida uma lista de afirmações. Leia atentamente cada uma delas e diga em que medida se aplica verdadeiramente à sua empresa/organização. Assinale, por favor, a sua resposta rodeando-a com um círculo, de acordo com a seguinte escala:

- 1 = Quase nunca se aplica
- 2 = Aplica-se pouco
- 3 = Aplica-se moderadamente
- 4 = Aplica-se muito
- 5 = Aplica-se quase totalmente

1. Falamos uns com os outros sobre assuntos que não compreendemos bem	1	2	3	4	5
2. Pensamos na forma como resolvemos problemas no passado (nos nossos sucessos e insucessos)	1	2	3	4	5
3. Juntamo-nos em grupo para resolver alguns problemas	1	2	3	4	5
4. Falamos das nossas funções	1	2	3	4	5
5. Sabemos que os nossos concorrentes têm informações sobre nós	1	2	3	4	5
6. Cada um de nós tem uma função a cumprir	1	2	3	4	5
7. Somos encorajados a tomar a iniciativa	1	2	3	4	5
8. Estamos atentos ao que os nossos concorrentes vão fazendo (por exemplo, adotamos os melhores "truques")	1	2	3	4	5
9. O que sabemos vê-se naquilo que fazemos melhor do que os nossos concorrentes	1	2	3	4	5
10. Agimos de acordo com a forma como estamos organizados	1	2	3	4	5
11. Passamos informação uns aos outros em reuniões de trabalho	1	2	3	4	5
12. Contamos uns aos outros histórias engraçadas que se passaram no nosso trabalho	1	2	3	4	5
13. Procuramos toda a informação que possa melhorar a qualidade do que fazemos	1	2	3	4	5
14. Agimos de acordo com certos princípios	1	2	3	4	5
15. Falamos da nossa empresa	1	2	3	4	5
16. Assistimos a seminários/conferências, lemos o que se publica ou contratamos especialistas	1	2	3	4	5
17. Frequentamos cursos de formação ou temos formação no posto de trabalho	1	2	3	4	5
18. Todos somos responsáveis pelo que devemos saber para trabalhar com qualidade	1	2	3	4	5

19. O que sabemos vê-se na forma como produzimos	1	2	3	4	5
20. Conversamos sobre o trabalho quando casualmente nos encontramos (por exemplo, no intervalo do café)	1	2	3	4	5
21. São recompensados aqueles que partilham o que sabem	1	2	3	4	5
22. O que sabemos é uma "arma" fundamental para ultrapassarmos os nossos concorrentes	1	2	3	4	5

A2: Psychological Capital Questionnaire (Luthans et al., 2007^b)

2 Relativamente às afirmações que se seguem, pense em que medida descrevem o modo como pode pensar acerca de si no momento atual. Use a escala seguinte para indicar, rodeando com um círculo, o grau em que concorda ou discorda com cada uma das seguintes afirmações:

1 = Discordo fortemente; 2 = Discordo; 3 = Discordo um pouco

4 = Concordo um pouco; 5 = Concordo; 6 = Concordo fortemente;

1. Sinto-me confiante quando procuro uma solução para um problema de longo prazo	1	2	3	4	5	6
2. Sinto-me confiante ao representar a minha área de trabalho em reuniões com a gestão da organização	1	2	3	4	5	6
3. Sinto-me confiante ao contribuir para as discussões sobre a estratégia da organização	1	2	3	4	5	6
4. Sinto-me capaz de ajudar a definir objetivos para a minha área de trabalho	1	2	3	4	5	6
5. Sinto-me confiante ao estabelecer contacto com pessoas fora da empresa (por exemplo, clientes e fornecedores) para discutir problemas	1	2	3	4	5	6
6. Sinto-me confiante a apresentar informação a um grupo de colegas	1	2	3	4	5	6
7. Se me encontrasse numa situação difícil no trabalho, conseguiria pensar em muitas formas de sair dela	1	2	3	4	5	6
8. Atualmente procuro alcançar os meus objetivos com grande energia	1	2	3	4	5	6
9. Para qualquer problema existem muitas formas de resolvê-lo	1	2	3	4	5	6
10. Neste momento vejo-me como uma pessoa bem sucedida no trabalho	1	2	3	4	5	6
11. Consigo pensar em muitas formas de alcançar os meus objetivos no trabalho	1	2	3	4	5	6
12. Neste momento estou a alcançar os objetivos profissionais que defini para mim próprio(a)	1	2	3	4	5	6
13. Quando tenho uma contrariedade no trabalho, tenho dificuldade em recuperar e seguir em frente	1	2	3	4	5	6
14. De um modo ou de outro, em geral consigo gerir bem as dificuldades no trabalho	1	2	3	4	5	6
15. No trabalho, se for necessário, sou capaz de ficar "por minha conta e risco"	1	2	3	4	5	6
16. Em geral ultrapasso com facilidade as coisas mais stressantes no trabalho	1	2	3	4	5	6
17. Consigo ultrapassar os momentos difíceis no trabalho, pois já passei anteriormente por dificuldades	1	2	3	4	5	6
18. Sinto que consigo lidar com muitas coisas ao mesmo tempo no trabalho	1	2	3	4	5	6
19. Quando as coisas estão incertas para mim no trabalho, habitualmente espero o melhor	1	2	3	4	5	6
20. Se algo de mal me pode acontecer no trabalho, isso acontecer-me-á	1	2	3	4	5	6
21. No meu trabalho olho sempre para o lado positivo das coisas	1	2	3	4	5	6
22. No trabalho, sou otimista acerca do que acontecerá no futuro	1	2	3	4	5	6
23. No trabalho, as coisas nunca me correm como gostaria	1	2	3	4	5	6
24. Trabalho com a convicção de que todo o contratempo tem um lado positivo	1	2	3	4	5	6

A3: Sociodemographic questionnaire

<p>1 Sexo</p> <p><input type="checkbox"/> Masculino</p> <p><input type="checkbox"/> Feminino</p>	<p>2 Idade: _____ anos</p>	<p>3 Há quantos anos trabalha na empresa/organização? _____ anos</p>
<p>4 Situação(ões) profissional(ais) (pode assinalar mais do que 1 situação)</p> <p><input type="checkbox"/> Empresário</p> <p><input type="checkbox"/> Profissional Liberal</p> <p><input type="checkbox"/> Trabalhador do Estado</p> <p><input type="checkbox"/> Trabalhador por conta de outrem</p> <p><input type="checkbox"/> Trabalhador-Estudante</p>	<p>5 Qual o vínculo que mantém com a organização?</p> <p><input type="checkbox"/> Prestador de serviços (recibos verdes)</p> <p><input type="checkbox"/> Contrato a termo (certo ou incerto)</p> <p><input type="checkbox"/> Contrato sem termo /efetivo(a)</p>	<p>6 No seu local de trabalho desempenha alguma função de chefia?</p> <p><input type="checkbox"/> Sim <input type="checkbox"/> Não</p> <p>Se respondeu SIM, que tipo de chefia?</p> <p><input type="checkbox"/> Chefia de Topo</p> <p><input type="checkbox"/> Chefia Intermédia</p>
<p>7 Grau de Escolaridade</p> <p><input type="checkbox"/> Sabe ler e escrever sem possuir a 4ª classe</p> <p><input type="checkbox"/> 1º ciclo do ensino básico (ensino primário)</p> <p><input type="checkbox"/> 2º ciclo do ensino básico (6º ano)</p> <p><input type="checkbox"/> 3º ciclo do ensino básico (9º ano)</p> <p><input type="checkbox"/> Ensino Secundário (12º ano)</p> <p><input type="checkbox"/> Bacharelato</p> <p><input type="checkbox"/> Licenciatura em curso</p> <p><input type="checkbox"/> Pós-Graduação/Mestrado (pós Bolonha)/ Licenciatura Pré Bolonha</p> <p><input type="checkbox"/> Licenciatura concluída (pós-Bolonha)</p> <p><input type="checkbox"/> Mestrado Pré-Bolonha</p> <p><input type="checkbox"/> Doutoramento</p>	<p>8 Setor de atividade da organização onde trabalha</p> <p><input type="checkbox"/> Indústria Transformadora</p> <p><input type="checkbox"/> Indústria Extrativa</p> <p><input type="checkbox"/> Comércio por grosso e a retalho</p> <p><input type="checkbox"/> Alojamento e restauração</p> <p><input type="checkbox"/> Agricultura, pecuária, pescas</p> <p><input type="checkbox"/> Construção</p> <p><input type="checkbox"/> Produção e distribuição de eletricidade, gás e água</p> <p><input type="checkbox"/> Transportes e armazenagem</p> <p><input type="checkbox"/> Educação e ciência</p> <p><input type="checkbox"/> Saúde humana e apoio social</p> <p><input type="checkbox"/> Atividades imobiliárias, alugueres e serviços prestados às empresas</p> <p><input type="checkbox"/> Artes e indústrias criativas</p> <p><input type="checkbox"/> Tecnologia de informação e comunicações</p> <p><input type="checkbox"/> Outra.</p> <p>Qual? _____</p>	<p>9 Dimensão da organização onde trabalha</p> <p><input type="checkbox"/> Tem até 9 colaboradores</p> <p><input type="checkbox"/> Tem entre 10 e 50 colaboradores</p> <p><input type="checkbox"/> Tem entre 51 e 250 colaboradores</p> <p><input type="checkbox"/> Tem entre 251 e 500 colaboradores</p> <p><input type="checkbox"/> Tem entre 501 e 1000 colaboradores</p> <p><input type="checkbox"/> Tem mais de 1001colaboradores</p> <p>10 Indique, por favor, o seu vencimento líquido mensal (aquilo que recebe em média por mês)</p> <p><input type="checkbox"/> Até 500 €</p> <p><input type="checkbox"/> Entre 501 e 1000 €</p> <p><input type="checkbox"/> Entre 1001 e 1500 €</p> <p><input type="checkbox"/> Entre 1501 e 2000 €</p> <p><input type="checkbox"/> Entre 2001 e 2500 €</p> <p><input type="checkbox"/> Entre 2501 e 3000 €</p> <p><input type="checkbox"/> Entre 3001 e 3500 €</p> <p><input type="checkbox"/> Entre 3501 e 4000 €</p> <p><input type="checkbox"/> Mais de 4000 €</p>

Obrigado pela sua colaboração!

A4: Table A1 - Descriptive Statistics of the Sample

Gender	Feminine	Masculine	
	60.7%	39.7%	
Age	Min	Max	
	18	69	
Years of work	Min	Max	
	1	46	
Professional Situation			
	n	%	
Entrepreneur	62	5.5	
Liberal professional	42	3.7	
State worker	262	23.3	
Worker to others	725	64.4	
Student-worker	71	6.3	
Bond to an organization			
	n	%	
Services provider	61	5.5	
Term contract	296	3.7	
No-term contract	750	23.3	
		n	%
	No	845	75.4
Leadership	Yes	275	34.3
	Top	61	5.4

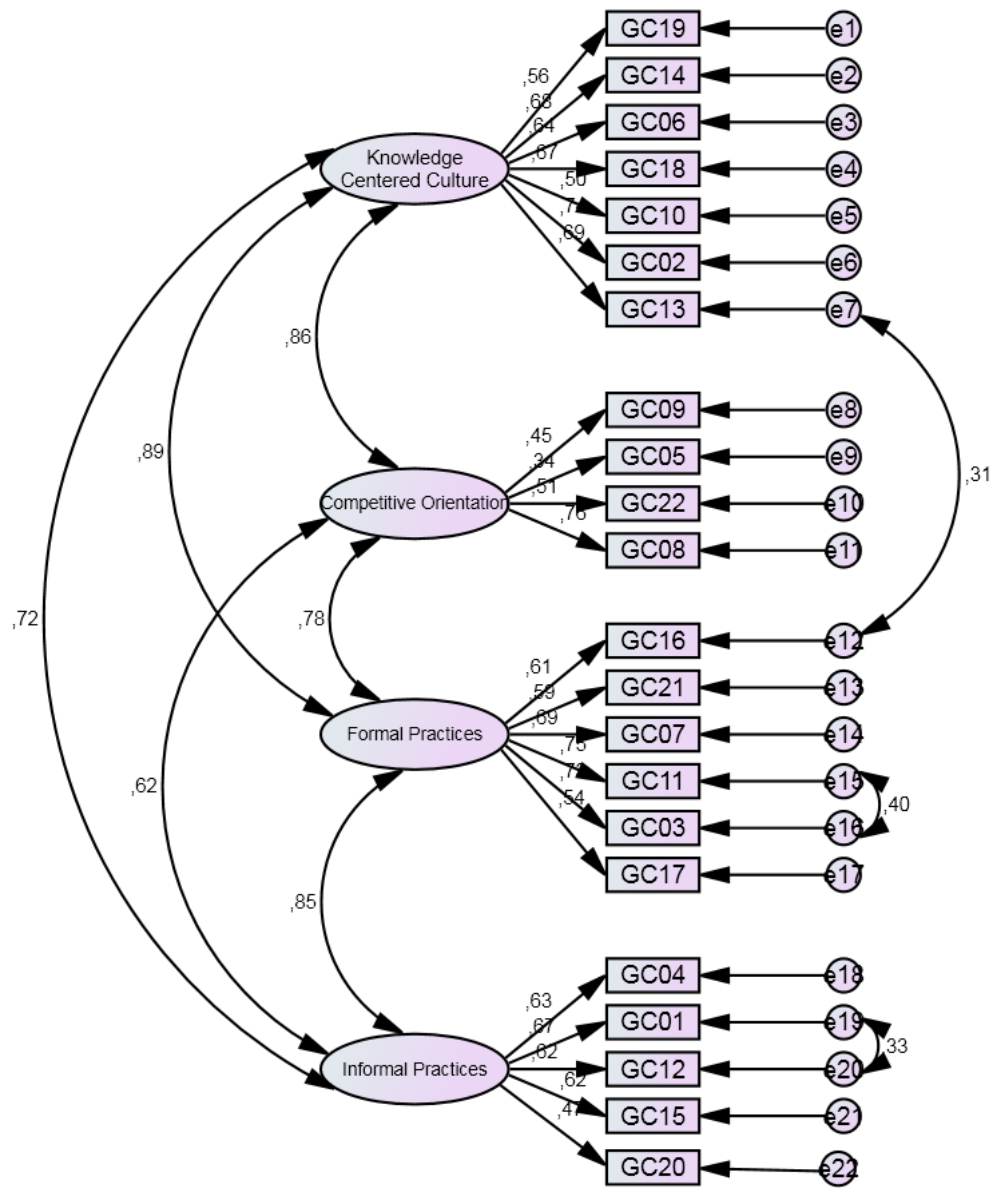
	Middle	209	18.5
School Level			
	n		%
Can read and write	5		.4
1° cycle of basic education	48		4.3
2° cycle of basic education	81		7.2
3° cycle of basic education	206		18.3
High school	366		32.6
Bachelor	29		2.6
Graduation going	114		10.2
Pos-graduation/ Master after	149		13.3
Bologna/ Graduation before			
Bologna			
Graduation after Bologna	86		7.7
Master after Bologna	31		2.8
PhD	8		.7
Dimension of the organization			
	n		%
Until 9	289		25.7
10-50	343		30.5
51-250	235		20.9
251-500	93		8.3
501-1000	65		5.8
+ 1000	98		8.7

Salary		
	n	%
Until 500	248	22.1
501-1000	543	48.4
1001-1500	228	20.3
1501-2000	67	6.0
2001-2500	21	1.9
2501-3000	8	.7
3001-3500	2	.2
3501-4000	2	.2
+ 4000	3	.3

Salary		
	n	%
Transforming Industry	112	11.0
Extractive Industry	3	.3
Wholesale and retail trade	131	11.8
Accomodation and food	72	6.5
Farming and fishing	14	1.3
Construction	48	4.3
Production and distribution of electricity, water and gas	16	1.4
Transport and storage	30	2.7
Education and science	165	14.8
Human health and social support	140	12.6

Real state, renting and consulting	12	1.1
Arts and creative industry	18	1.6
Information technology and communications	49	4.4
Other	292	26.3

A5: Tetra factorial model of factorial validation of Short Form of Knowledge Management questionnaire



A6: Tetra factorial model of factorial validation of Psychological Capital questionnaire

