Linking peripheral vision with relational capital through knowledge structures

Cegarra-Navarro, J-G, Wensley, AKP, Garcia-Perez, A & Sotos-Villarejo, A

LINKING PERIPHERAL VISION WITH RELATIONAL CAPITAL THROUGH KNOWLEDGE STRUCTURES

Juan-Gabriel Cegarra-Navarro[1]; Anthony K.P. Wensley[2]; Alexeis Garcia-Perez[3]; Antonio Sotos-Villarejo[4]

[1]Universidad Politécnica de Cartagena, Spain (juan.cegarra@upct.es);
[2] The University of Toronto, Canada (anthony.wensley@utoronto.ca);
[3] Coventry University, UK (alexeis.garcia-perez@coventry.ac.uk);
[4] Bankia, Spain (sotos@bankia.com)

Abstract

Purpose – Peripheral vision or side vision refers to that which is visible to the eye while being outside of its central area of focus. Peripheral vision enables organisms to detect movement and potential threats in their environment. This paper aims to contribute to the understanding of the concept of peripheral vision in the business environment, as well as its relationship with knowledge structures in the form of technology knowledge and absorptive capacity. The relative importance and significance of technology knowledge and absorptive capacity as mediators between 'relational capital' and 'peripheral vision' are also examined.
Design/methodology/approach – The paper reports an empirical investigation involving 125 employees from the banking sector. Data collected was statistically analysed using PLS-Graph software version 03.00. Results of the data analysis show relationships uncovered in the existing literature.
Findings – The creation of relational capital by employees from the banking sector relies to a large extent on managers' ability to perceive, analyse and understand activity that is often outside the focus of their attention.
Practical implications – Managers who explicitly value their relational capital have a wider vision of their environment. In turn, a wider understanding of the activity in the environment drives the strengthening of the organisation and its relational capital.
Originality/value – Peripheral vision can have a direct impact on the organisation's appetite for the development of its technology knowledge base, thus contributing to enhance the firm's absorptive capacity as well as the extent, quality and value of its relational capital.

Keywords: *Peripheral Vision, Technology Knowledge, Relational Capital, Absorptive Capacity*.

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1. Introduction

Relational capital represents the value derived from the relationship between a business and its external stakeholders (Onge, 1996). The current business environment is characterised by a shift from customer acquisition to a value creation process whereby firms continuously evaluate and seek to enhance the value of their relational capital (Nieto & Quevedo, 2005). In their efforts to do so, managers are expected to detect, interpret and act on often ambiguous signals present in their environment and its periphery (Day, 1994; Day, 2000; Day & Schoemaker, 2006). Identifying peripheral activities and events may lead to new value-adding opportunities and provide new perspectives before these are perceived by the competition. The alternative perspectives available only in the periphery may add significant value to the firm's relational capital. Furthermore, a well developed relational capital allows for a better interpretation of such peripheral, alternative perspectives (Nahapiet & Ghoshal, 1998). As Day and Schoemaker (2006) also point out, lack of awareness of peripheral signals can affect the competitive position of the firm as competitors may benefit from those opportunities. When organisations ignore the events unfolding on the periphery of their businesses they are likely to incur significant costs and additional risks (Fairclough, 2005).

Peripheral vision or side vision refers to what is visible to the eye while being outside of its central area of focus. An appropriate response to a changing environment requires the ability for an organisation to dynamically update not only targets and plans but also its knowledge structures: routines, processes, protocols and new technology tools. The extant literature in the field of knowledge management and intellectual capital supports the theory that organisations that possess relevant knowledge are likely to have the ability to absorb new knowledge and use it to generate new ideas and create new knowledge structures (Tsai, 2001; Cepeda *et al.*, 2012; Martelo & Cegarra, 2014). Haeckel (2004) argues that success of organisations in turbulent business environments often relies on managers' ability to identify patterns in noisy data to then turn their early understanding of those patterns into meaning before these become obvious to the firm and its competitors. Thus, managers' peripheral vision is related to their ability to prepare the grounds for the creation and assimilation of new knowledge and knowledge structures (Day & Schoemaker, 2006). The present study focuses on the impact that peripheral vision may have on two key knowledge structures in organisations. These are absorptive capacity and technology knowledge.

The concept of absorptive capacity (ACAP hereafter) was initially defined as a company's ability to recognise the value of new information, assimilate valuable information and apply it to the pursue of commercial ends (Cohen & Levinthal, 1990). Later, Szulanski (1996) added the views that ACAP also encompasses the learning ability and problem solving skills that enable organisations to assimilate valuable knowledge and create new knowledge. A concept related to ACAP is that of technology knowledge (T-knowledge hereafter). T-knowledge refers to the knowledge that enables users of information technologies to find the answer to their information needs as and when needed (Edvinsson, 2002; Cegarra *et al.*, 2012). T-knowledge includes knowledge of operating systems and application software, as well as knowledge of computer hardware and the ability to install and remove peripheral devices, install and remove software programs and create, archive, find and retrieve documents in different formats (Sharma, 2000; Nohria & Gulati, 1996).

The peripheral vision of managers often enables the organisation to recognise the need for an update in existing knowledge and knowledge structures while also stimulating the implementation of the necessary changes (Haeckel, 2004; Day & Schoemaker, 2006). Based

on this premise, this study aims to examine the effects that the peripheral vision of managers has on the development of both T-knowledge and ACAP in organisations. The relative importance of T-knowledge and ACAP as mediators between 'relational capital' and 'peripheral vision' is also examined. Our empirical investigation also explored the concept of relational capital in the banking sector in order to highlight the significance of ACAP and T-knowledge as mediators between the peripheral vision of managers and relational capital in organisations.

The banking business is very complex. It can no longer be described by using the old order of predictability, derived from traditional knowledge structures and technologies such as personal computers, emails and mobile phones (Carballo-Cruz, 2001). In banking institutions today staff need appropriate and up-to-date knowledge to face an ever increasing number of challenges, including those derived from global competition for deposits, loans and underwriting fees, as well as increasing customer demands, shrinking profit margins, and the need to keep up with new technologies and their impact on the business (Ali and Ahmad, 2006). As a result, creating relational capital in banking institutions may rely on the organisations' capacity to culturally adapt to a process of change through the continuous gathering of new knowledge and the adoption of new knowledge structures. These considerations led the authors to consider the banking business as an appropriate setting for an investigation into the peripheral vision of managers and its impact on relational capital.

This paper has been structured as follows: in section 2 the characteristics of each of the different variables involved in the modelling are presented, and relationships which seem likely to exist between such variables are outlined; in section 3 the sample of the study is described and measurements used to define each of the variables are defined; section 4 presents the main results of the study, while the main conclusions of this work are presented in section 5.

2. The proposed research model

2.1 Relational Capital

The market value of an organisation is the result of a complex interplay of tangible and intangible assets (Quinn, 1992; Edvinsson & Malone, 1997). Research has shown that approximately 80% of such value may reside in intangible assets (Fornell, 2000), with the implied intangible asset value of the S&P 500 companies having grown to an average 84% by January 1, 2015 (Ocean Tomo, 2015), an increase of 4 percentage points over the previous ten years and of 52 percentage points since the corresponding study conducted in 1985. Such intangible assets are derived from customer, competitor and supplier relationships which constitute the relational capital of the firm (Lee *et al*., 2007).

Kianto *et al*. (2013) have defined relational capital as the ability of an organisation to interact in a positive manner with the external stakeholders and in doing so unlock the wealth creation potential of other intangible assets such as R&D, human capital and other characteristics of organisational structure. According to Bueno (1998), relational capital represents the knowledge embedded in the marketing channels and customer relationships that an organisation develops as it conducts business. Such knowledge arises in a context of a strong sense of belonging and a highly developed capacity of cooperation, typical of culturally similar people and institutions (Capello & Faggian, 2005; Chang & Tseng, 2005). These

relationships and the accompanying trust they stimulate lead to co-operation activities that in turn enables the creation and sharing of new knowledge.

Other terms used to refer to relational capital include "customer capital" and "social capital" (Onge, 1996; Nahapiet & Ghoshal, 1998). Customer capital as a concept was first introduced by Edvinsson and Malone (1997), who defined relational capital as the relationships that an organisation is able to build with its customers. Bontis (1998) later suggested that relational capital includes all of the firm's external relationships. Previously, Brooking (1996) had used the term 'market assets' to refer to those assets that are derived from a beneficial relationship of the organisation with both markets and customers. From this perspective, relational capital can be considered as part of the concept of "social capital" initially proposed by Nahapiet and Ghoshal (1998) to refer to the network of relations that extend beyond the organisational boundaries. From a practical point of view, long-term relationships with external agents and the value of such relationships may be considered as success factor in competitive markets (Day, 2000; Subramani, 2004).

The authors have adopted Pierre's (2010) views of relational capital as related to the relationships between the business and its customers as well as the value of such relationships. We understand that relational capital provides useful intelligence and contacts which can in turn increase the level of knowledge and expertise within the organisation, as highlighted by Hayer & Ibeh (2006). Thus, we agree with authors who have argued that relational capital has the potential to contribute to the ability of an organisation to achieve its objectives and enhance its productivity (Day, 2000), and therefore drive profits (Edvinsson & Malone, 1997; Duffy, 2000). In that respect we see the potential in relational capital to reduce costs as the different actors involved learn how to better interact with each other, as discussed by Fernström (2004). Furthermore, we understand that relational capital may lead to an increased transactional efficiency that is likely to lead to growth, increased profitability and productivity, in addition to an increased commitment by all relevant actors towards the sustaining and enhancing of mutual relationship, as previously highlighted by Ring and Van de Ven (1994).

2.2 Peripheral Vision

The considerations above imply that in order to create relational capital, the primary knowledge that needs to be shared is that about customers (Kakavelakis, 2010). This does not simply mean updating existing customers' contact details and preferences, but also identifying new customers as well as threats and opportunities in emerging technologies to provide new solutions for existing and potential customers (Bueno, 1998; Duffy, 2000; Pierre, 2010; Zaragoza and Claver, 2011). Despite the fact that relational capital benefits from both the central and the peripheral vision, the ability of an organisation to augment its relational capital from its peripheral vision has generally been overlooked by researchers and practitioners (Day & Schoemaker, 2004). It can be argued that insights on the importance of peripheral vision were initially developed by Leavitt (1960) in his foundational and much cited paper 'Marketing Myopia'. More recently Christensen (1995) highlighted the risk to the very existence of companies in their failure to recognise the importance of both market and technology knowledge which does relate directly to their current core markets or technologies.

Peripheral vision is that section of vision which occurs outside the very centre of gaze (Mathur *et al*., 2013). Its main purpose is to detect movement and hence potential threats and

challenges for the individual. From an evolutionary perspective it can be argued that organisms able to identify threats through peripheral vision would be likely to have an added survival advantage.

Peripheral vision is a very important part of an individual's eye sight as it affects both the subsequent focusing of attention and appropriate anticipatory behaviour (Bhootra & Sumitra, 2008). For example, a hunter who has developed an extensive peripheral vision will be able to detect the movement of their prey much more quickly than other hunters who may concentrate too much on their central vision. The same applies to a prey whose own existence is being threatened. This argument can be valuably extended to the world of business. Managers and their organisations may focus their attention on a number of key issues and targets such as profits, marketing quotas and the search for a relatively small percentage of profit from existing customers (Sherden, 1994; Cegarra & Rodrigo, 2003). While focus is fundamental to effective exploitation, it may carry some attendant risks (Day & Schoemaker, 2004). For example, it may lead to an underestimation of critical activity taking place at the periphery, outside the focus of attention. This may well prevent the development of explorative models and strategies (Haeckel, 2004).

By looking beyond the scope of valuable (central) customers, organisations may be able to pick up signals that, although seemingly irrelevant, may be a valuable source of information for the prediction of future needs of the entire universe of potential customers (Day & Schoemaker, 2004). As Cunha and Chia (2007) noted, peripheral vision can not only raise awareness of the risks of losing valuable customers. It can also lead to the identification of new opportunities and growth prospects. Moreover, peripheral vision helps in understanding the changing preferences of customer and their attitude towards policies such as pricing, which may well enable the identification of future risks and opportunities (Day & Schoemaker, 2004; Day & Schoemaker, 2006).

Figure 1 provides a synopsis of the different types of customers who could be used to identify new opportunities to organisations via peripheral vision. Although each customer and each relationship is different, and therefore, potentially unique (Sherden, 1994), Figure 1 helps develop an understanding of the fact that by focusing only on existing valuable customers, companies may fail to appreciate less immediate threats from the periphery where potential customers may be located (Haeckel, 2004).

Insert Figure 1 about here

On many occasions managers in general and CEOs in particular have limited resources to facilitate the prediction of what organisations will need to be able to do to attract customers in the future (Haeckel, 2004). For example, they usually don't have the time to participate in all customer meetings or to check all that is being said and done in these meetings (Cegarra & Rodrigo, 2003). Over time certain channels of communication are developed, certain perspectives favoured and certain rules and concepts adopted. This means that much of what happens in business relationships is not directly perceived by managers. Thus, finding ways of re-directing managers' perceptions to the periphery is likely to result in an improved ability to identify emerging trends, potential customers and potential shifts in customer relationships (Haeckel, 2004; Day & Schoemaker, 2004; Day & Schoemaker, 2006). These considerations have led us to frame the first hypothesis of our study as follows:

H1: Absorptive capacity has a positive effect on Relational Capital.

2.3 Knowledge structures

As described in section 2.2, many scholars have suggested that the ability to use external knowledge is a critical component of organisations' ability to innovate (Cohen & Levinthal, 1990; Tsai, 2001; Zahra & George, 2002). From this perspective, peripheral vision is the part of the learning process that allows managers to identify and understand the value of new knowledge (Day & Schoemaker, 2006). It also allows managers to make judgments and form impressions about new opportunities and growth prospects and, by extension, it also enables the conversion of these prospects into technologies or commercial processes and products/services in order to respond appropriately to customer needs and complaints and thus build relational capital (Harrington & Guimaraes, 2005; Newey & Zahra, 2009).

One way that this conversion might be achieved is through the development of "knowledge structures" that facilitate the competitive behaviour of firms in the market and adapt either directly or indirectly to the changing environment and to achieve new goals (Martelo & Cegarra, 2014). Such knowledge structures provide ways of exploring and structuring organisations' future course of action while providing paths that allow for the exploitation and deployment of newly assimilated knowledge (Martelo & Cegarra, 2014). This paper aims to contribute to the understanding of the effects that peripheral vision may have on two specific knowledge structures, namely T-knowledge and ACAP.

Peripheral visual information can be processed more quickly through the use of technology. For example, visual elements or images can be processed with computer software in many different ways in order to extract relevant knowledge concerning customers' needs and behaviours. In addition, T-knowledge also refers to the means through which the intellectual processes embedded in technological activity can themselves be used (Cegarra & Sabater, 2005; Cegarra *et al*., 2012). Thus, developing T-knowledge can help foster new skills, enabling employees to operate particular technologies, such as those supporting customer services, in order to improve their insights into customer needs (Martinez *et al*., 2012).

ACAP is a dynamic ability that depends on the organisational processes and routines that support organisational change and evolution. Zahra and George (2002) propose two dimensions of ACAP namely potential and realised absorptive capacity. Potential absorptive capacity (PACAP) is concerned with an organisation's receptiveness to external knowledge and involves a company's ability to acquire, analyse, interpret, and understand new external knowledge. Realised absorptive capacity (RACAP), on the other hand, reflects an organisation's capacity to transform and exploit new and existing knowledge by incorporating it into its operations (Zahra & George, 2002).

It is also important to note that new knowledge should persist in the organisation and be accessible for those individuals involved in the creation and sustaining of customer relations. Otherwise, peripheral vision and the valuable knowledge that it generates may be lost (Fernandez & Sune, 2009). As described by Haveman and Khaire (2004), increasing competition, continuous change and mergers and acquisitions both within and between industries have created the risk of failing to consider the loss of valuable knowledge, due to the passage of time and the turnover of managers and employees. This can be avoided through more thoughtful and extensive knowledge acquisition, superior analysis of existing data, superior pattern recognition, faster frame-switching, and the development and re-development of appropriate knowledge structures (Cunha & Chia, 2007; Noblet *et al*., 2011;

Martelo & Cegarra, 2014). In this vein, T-knowledge and its associated constructs (e.g. databases, files or protocols), are frequently cited as ways to preserve and use that valuable knowledge (Gold *et al*., 2001). It is also worth mentioning the fact that the extent to which companies make use of the capacities it develops will depend for the most part on the pool of opportunities each business has at its disposal (Nieto & Quevedo, 2005).

Based on the above discussion the following two hypotheses are proposed:

H2: Peripheral vision has a positive effect on absorptive capacity.

H3: Peripheral vision has a positive effect on T-knowledge

The considerations above also imply that for relational capital to exist at an organisational level, processes must be in place that result in the attribution of appropriate meaning to events or sequences of events relating to external stakeholders such as customers or competitors (Cegarra *et al*., 2012; Pierre, 2010). It may be argued that absorptive capacity represents the link between external signals provided by peripheral vision and the creation of valuable knowledge (Wah, 2000). Without the development of absorptive capacity opportunities will be lost and new knowledge will be inadequately utilised. This means that relational capital needs to be created around 'absorptive capacity' to attain any benefit from the knowledge provided by external stakeholders (Kridan & Goulding, 2006). In addition, the presence of T-knowledge and the subsequent utilisation of existing data may be a means by which new knowledge may be successfully applied (Sorensen & Lundh, 2001) and therefore it also enables the firm to take advantage of the pool of technological opportunities (Klevorick *et al*., 1995). In these circumstances, T-knowledge and absorptive capacity provide important knowledge and knowledge structures that contribute to a process of establishing and enhancing and stabilising business relationships.

While T-knowledge can be understood as a way of classifying and making the pool of technological opportunities accessible to its potential stakeholders (Klevorick *et al*., 1995), absorptive capacity can be understood as a way of absorbing and applying the knowledge that has already been acquired (Zahra & George, 2002; Cepeda el al., 2012). Through the use of such knowledge and knowledge structures, individuals can analyse the advantages and disadvantages of a range of alternative solutions, such as increased flexibility, better control over processes and time savings. This, in turn, facilitates the easy transcription of relevant information and enables users to type and file valuable knowledge to provide support for enhancing, strengthening and stabilising customer relationships (Harrington & Guimaraes, 2005; Carayannis *et al*., 2006). Based on these insights we propose the following hypotheses:

H4: Absorptive capacity has a positive effect on relational capital

H5: T-knowledge has a positive effect on relational capital

Figure 2 illustrates our proposed model, in which relational capital is conceptualised as a joint process whereby the *peripheral vision* facilitates the creation of both T-knowledge and absorptive capacity. The combination of this new knowledge with external opportunities identified by managers will then be available to the members of the organisation for them to create new relational capital.

Insert Figure 2 about here

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3. Method

3.1 Data collection

The population samplings used in this study comprised branch managers from the branches of Bankia, a financial group in Spain with a leading position in lending and in management of customer funds. With a network of 2,000 branches, Bankia is the first Spanish bank for domestic business, with total assets of 272,000 million euros and a net equity value of 12 billion euros. It employs 14,500 people and also has a strong international presence, with offices in Beijing, Dublin, Lisbon, London, Miami, Milan, Munich, Porto, Paris, Shanghai, Warsaw and Vienna. Whilst the financial sector is very complex and requires intensive use of knowledge practices to provide meaningful advice to their customers (Serenko et al., 2015), Bankia has been successful in progressing key aspects of its business, both in 2015 and in the first few months of 2016. In terms of investment funds, for example, Bankia gained 24 basis points of market share last year, bringing their share to 4.98 percentage points (Bankia, 2016).

Before conducting the surveys, managers from 690 branches with more than six employees in Spain were contacted by our research team and invited to participate in the study. They were informed via a formal letter of the objectives of the research and were provided assurance of its strictly scientific and confidential nature, as well as the global and anonymous treatment to be given to the data collected. A total of 690 managers were invited, 125 of which agreed to participate in the study, resulting in a response rate of 18.25%.

The survey was administered over a period of two months, from early January to early March 2016. Of the response rate of 18.25%, the factor of error achieved was 7.92% for p=q=50% and a reliability level of 95.5%. This is greater than the average response rate of 15 to 25 per cent suggested by Menon *et al.* (1996) for surveys involving senior management. The researchers have tested for common methods variance (Podsakoff *et al.*, 2003) which is a potential risk arising from the use of a single informant when collecting data in each company. In doing so, two statistical analyses were conducted to ensure the absence of non-response bias (Armstrong & Overton, 1977). Firstly, the authors used factor analysis, the recommended way of testing for the existence of bias. All variables were analysed in order to ensure that there was only one important factor. The results showed ten factors with eigenvalues greater than 1.0 and the total variance explained was 72.99%. Secondly, the authors compared the early and late respondents (1=January 2016 and 2= February 2016) in terms of relational capital and technology knowledge. The independent sample t-test revealed no significant difference between the two groups ($p=0.89$ and $p=0.36$, respectively). Therefore, non-response bias was not considered to be a problem in this study (Armstrong & Overton, 1977).

3.2 Measures

Churchill's (1979) approach to questionnaire development was used, combining scales from several other relevant empirical studies with new items to make an initial list of 25 items. Several items were modified through interviews with colleagues and a first draft of the questionnaire was tested with three bank branches of Bankia. The questionnaire constructs were operationalised and measured as follows (see Appendix for a list of items):

a) Previous studies by Day and Schoemaker (2006) provide guidance in developing items to measure peripheral vision. The importance of 'peripheral vision' to cognitively managers relates to enhancement of technical, administrative and social strategies through the accurate understanding of the information available to external stakeholders and where such information is located in relation to organizational initiatives. This highlights the way management faced up to change, actively introduced it into the company through projects, fostered collaboration with potential customers and recognised the value of peripheral information.

b) In order to examine absorptive capacity, the authors sought to measure the dimensions that have been defined by Zahra & George, (2002). Items were measured using a Likert scale from the study by Jansen *et al*. (2005). ACAP consists of two dimensions: PACAP and RACAP. Five items were used to assess the intensity and direction of efforts expended in knowledge acquisition and assimilation and to measure the extent to which firms were able to analyse and understand new external knowledge (PACAP). Four other items were used to measure transformation and to assess the extent to which firms were able to facilitate recognition of the opportunities provided by new external knowledge and the potential impact of the acquisition of such knowledge on the success of existing operations, structures, and strategies (Zahra & George, 2002).

c) In order to examine technology knowledge (T-knowledge), this study sought to measure the dimensions that have been defined for technology slack (Szulanski, 1996; Sharma, 2000; and Nohria & Gulati, 1996). Technology knowledge therefore consists of four items.

d) Among the outcomes of relational capital (RC), factors relating to the existence of profitable relationships and the value of these relationships (e.g. growth in terms of sales, profitability or productivity) are most often used (Edvinsson & Malone, 1997; Duffy, 2000). The authors also adopted questions focusing on some characteristics of the company and its dealing with customers. These included the perceived quality of the services, the speed of response, and strategies in place to achieve customer satisfaction, which are also important dimensions of relational capital (Chang & Tseng, 2005; Bueno, 1998; Duffy, 2000). The final cleansed scale consisted of 7 reflective indicators.

3.3 Data analysis

This study uses PLS-Graph software version 3.00 to conduct an analysis of the data collected. Using PLS involves a two-stage approach (Barclay *et al*., 1995). The first step is concerned with the assessment of the measurement model. This allows the relationships between the observable variables and theoretical concepts to be specified. This analysis is performed in relation to the attributes of individual item reliability, construct reliability, average variance extracted (AVE), and discriminant validity of the indicators of latent variables. In the second step, the structural model is evaluated with the aim to understand the extent to which the causal relationships specified by the proposed model are consistent with the available data. For hypothesis testing, this study used the bootstrapping procedure recommended by Chin (1998).

In order to analyse the relationships between the different constructs and their indicators, the research adopted the latent model perspective in which the latent variable is understood to be the cause of the indicators. The authors therefore refer to reflective indicators for first-order

constructs or dimensions. Three constructs in the model are operationalised as first-order reflective constructs (i.e. T-knowledge, peripheral vision and relational capital), while ACAP is modelled as second-order reflective construct. With regard to the measurement model, the authors began by assessing the individual item reliability (Table 1). The indicators exceed the accepted threshold of 0.7 for each factor loading (Carmines & Zeller, 1979).

Insert Table 1 about here

From an examination of the results shown in Table 2 it can be argued that all of the constructs are reliable. The values for both the Cronbach's alpha coefficient and composite reliability are greater than the 0.7 required in the early stages of research and the stricter value of 0.8 for basic research (Nunnally, 1978). The AVE should be greater than 0.5, meaning that 50% or more variance of the indicators should be accounted for (Fornell & Larcker. 1981). All the constructs of our model exceed this condition (Table 2). To assess the discriminant validity, the square root of the AVE (the diagonal in Table 2) was compared with the correlations between constructs (the off-diagonal elements in Table 2). On average, each construct relates more strongly to its own measures than to others.

Insert Table 2 about here

As noted above, second-order confirmatory factor analysis was conducted of a model depicting the constructs of PACAP and RACAP. From an examination of the results in Table 3, all first-order and second-order factor loadings were significant. In addition to this, ACAP explains a high variance in their respective processes (i.e. PACAP and RACAP), thereby providing evidence that ACAP is a multifaceted construct, construed from two dimensions, namely PACAP and RACAP.

Insert Table 3 about here

4. Results

Since PLS makes no distributional assumptions in its parameter estimation, traditional parameter-based techniques for significance testing and modelling are used for this study (Chin, 1998). The structural model is evaluated based on the algebraic sign, magnitude and significance of the structural path coefficients, the R^2 values. Consistent with (Hair *et al*., 2013), bootstrapping (500 resamples) was used to generate standard errors, t-statistics, and confidence intervals. This allows us to assess the statistical significance of the path coefficients. The results of hypothesis testing are presented in Table 4, with the proportion of variance explained in 'relational capital' being above the common standard of 0.36 (Wetzels *et al*., 2009; Hair *et al*., 2013).

Insert Table 4 about here

The structural model resulting from the PLS analysis is summarised in Figure 2, where the variance of endogenous variables (R^2) and the standardised path coefficients are shown. Firstly, it was determined that a positive relationships exist between Peripheral Vision (PV) and Relational Capital (RC) (a_1=0.16; *p<0.01*). Secondly, it was determined that positive relationships exist between PV and ACAP (a_2=0.36; *p<0.01*) and between ACAP and RC (a_4=0.19; *p<0.01*). Thirdly, positive relationships emerged between PV and T-knowledge

(a$_3$=0.52; *p<0.01*) and between T-knowledge and RC (a$_5$=0.47; *p<0.01*). Consequently, the findings also provided full support for H1, H2, H3, H4 and H5.

Insert Figure 2 about here

Following the recommendations of Preacher and Hayes (2008), a post-hoc indirect effect analysis was carried out to tests the indirect effect of independent variables on the dependent variable by way of the mediator (see Table 5). In doing so, a two-step procedure for testing mediation in PLS has been followed: Firstly, the authors use the specific model in question with both direct and indirect paths included and perform 500 bootstrap resampling and explicitly calculate the product of the direct paths that form the indirect path being assessed; Then the significance is determined using percentile bootstrap. This generated 95% confidence intervals (CI) for the indirect relationships under study. As shown in Table 5, T-knowledge and intentional unlearning mediate the relationship between ACAP and relational capital.

Insert Table 5 about here

5. Discussion

The first contribution of this research has been the study of the relationship between peripheral vision and relational capital in a series of relationships represented in the model in Figure 1. The relative importance and significance of T-knowledge and ACAP as mediators of the relationship between 'relational capital' and 'peripheral vision' has also been examined. The results achieved support the argument made, that most of the managerial perceptions on the knowledge generated by the peripheral vision are channelled through T-knowledge and ACAP. A possible explanation for this is that improvements in the organisation's peripheral vision may lead not only to the identification of a wider range of opportunities. It can also help organisational members diagnose and work to resolve operational issues which, in turn, are expected to have a positive effect on the firm's knowledge and knowledge structures. Under this framework, the knowledge provided by the periphery of an organisation's vision can lead to rapid reconfiguration in response to a wide range of opportunities potentially leading to innovation and successful adaptation to technological change (Haeckel, 2004).

The second contribution of this research derives from the results of the empirical test of the hypotheses. The managerial implications of the relationships observed between the factors that constitute the hypothesised relationships are discussed in more detail in below.

With respect to the test of the hypothesis H1 (*PV → Relational Capital*), the results are consistent with prior organisational research (e.g. Haeckel, 2004; Day & Schoemaker, 2006). As expected at the beginning of this study, it was confirmed that attention to the activity that takes place within the organisation's peripheral vision may have a positive effect on relational capital. That is, newly created knowledge derived from peripheral vision could allow branch managers to select, initiate, develop, and maintain business relationships with existing and new customers. A possible explanation for this result is that focusing on signals obtained from an organisation's peripheral vision is likely to lead to the creation of new knowledge (Capello & Faggian, 2005) and the consolidation of those customer relationships that the organisation develops through the course of its continuous evolution (Hafizi & Hayati, 2006). For example, depending on whether managers understand potential customers

correctly, they may develop the ability to predict and respond faster to the changing preferences of existing customer and to pricing (Chang & Tseng, 2005) which in turn strengthens relational capital such as public opinion about a company and its brand.

With regard to H2, the results support the hypothesis that there is a positive relationship between the organisation's peripheral vision and ACAP ($PV \rightarrow ACAP$). This means that the organisation's peripheral vision is likely to help sustain its ACAP. For example, the early identification of external opportunities by managers would become a very valuable resource for the organisation, as long as it can act upon these external opportunities timely and effectively. This confirms the position adopted by Noblet, Simon and Parent (2011), who found that the interactions and connections that firms build with outside organisations can strengthen their absorptive capacity and improve the effectiveness of the transfer process. In other words, though ACAP managerial perceptions of the periphery move from managers to organisational members so that all opinions can be heard and understood. For the banking industry this means that branch managers' ability to interpret and share external signals with other members of the organisation may determine the bank's ability to absorb that external knowledge (Gold *et al.*, 2001; Nieto & Quevedo, 2005; Cunha & Chia, 2007).

With regard to H3 ($PV \rightarrow T\text{-}knowledge$), the results support the argument that knowledge of technological trends gleaned from potential customers by managers is likely to have a positive effect on achieving organisational goals, which may have a significant impact on understanding customers' expectations. A plausible explanation for this result is that since technological expectations change as a result of technology changes (Starbuck, 1996), managerial peripheral vision can help members of the organisation to become more aware by updating T-knowledge into how the latest technology operate (Zajicek, 2006). In fact, even those familiar with technology often have very little idea of how new technology products and software progress. In this respect, Herschbach (1995) observed that T-knowledge arises from and is embedded into human activity. Hence, it can be argued that the presence of a context that fosters the managers' ability to understand how technology affects potential customers is likely to become essential if companies are to update and diffuse knowledge of what others, stakeholders and competitors, are doing.

With respect to the test of hypothesis H4 ($ACAP \rightarrow Relational\ Capital$), the data indicates that *ACAP* is a key-component to strengthen the relational capital. Aspects of *ACAP* include whether or not a firm can access additional, and reconfigure existing, component knowledge to constitute a response to client or market needs (Noblet *et al.*, 2011). Therefore, the capacity of a firm to increase the transactional efficiency of the relationship with its external stakeholders will be enhanced by an appropriate knowledge structure, offered through processes, rules and routines, to respond to changing market conditions. Having highly specific knowledge allows for the firm to initiate and maintain relations with customers as a way to capture new, potentially relevant knowledge (Cohen & Levinthal, 1990) which can be used to attract other customers therefore resulting in an improved relational capital (Ring & van de Ven, 1994; Bueno, 1998; Fernström, 2005;).

In terms of hypothesis H5 (*T-knowledge* $\rightarrow$ *Relational Capital*), the results confirm that there is a positive relationship between T-knowledge and Relational Capital. These findings support the views of Carayannis *et al.* (2006) who drew attention to the fact that the use of technology determines the quality and speed of communications and those coordinated search procedures which improve external relationships. A possible explanation for this result would be that appropriate knowledge structures including technology capabilities are required or the

organisation to respond quickly and effectively to current and potential customer needs and expectations (Carayannis *et al.*, 2006). Therefore, the presence of T-knowledge, that is technology-related skills and attitudes, are important in order to ensure that customers have a continuous level and quality of response from the organisation, regardless of the technology being used (Starbuck, 1996). Also, the implementation and use of new technologies within the organisation may generate customer benefits if there is coherence between knowledge of technologies (e.g. management and security of customer data) and customers' perception of the operations of the firm and expectations of its service.

Finally, it is important to note that the indirect effects of peripheral vision on relational capital via both the ACAP and T-knowledge were fully verified by this study. We found that peripheral vision may not only help managers explain variations on customer expectations, but also exploit the current knowledge structures of the organisation (i.e. T-knowledge and ACAP). For example, by knowing how secure customers perceive the company's technology infrastructure to be, the organisation will be able to create new electronic services or adjust existing ones to meet customers' expectations (Haeckel, 2004; Day & Schoemaker, 2006). This is likely to have a positive effect not only on satisfaction of existing customers' needs but also on the chances of them recommending the company and its products and services to other potential customers (Day, 2000).

6. Concluding remarks

This paper has made a contribution to the understanding of the potential relationships between peripheral vision, as applied in an organisational context, and the two knowledge structures focus of this study. The relative importance and significance of ACAP and T-knowledge as mediators between 'relational capital' and 'peripheral vision' has also been examined through an empirical investigation of 125 employees from the banking sector. The study has concluded that the creation of relational capital by employees from the banking sector depends to a significant extent on how managers acquire, analyse, interpret, and apply new external knowledge. The results of the study also indicate that the effects of the knowledge generated by the peripheral vision on relational capital are mediated by ACAP and T-knowledge. A possible explanation would be that whilst ACAP and T-knowledge are fostered among employees in the banking sector, their managers can capitalise on existing opportunities to strengthen and enhance relational capital through new and potential customers. Therefore, although peripheral vision brings with it potential knowledge related to the nature of new market opportunities, new customers and emerging customer needs, this knowledge needs to be channelled though the right structures for appropriate action.

This study has some limitations. Firstly, the research is based on self-reports, which can bias its findings. Secondly, although every effort has been made to define constructs accurately and informed by relevant literature and validated by practitioners, such constructs can realistically only be regarded as proxies for underlying phenomena that in themselves are not fully measurable. Thirdly, as a single research methodology was employed, further research by means of interviews and observational case studies could be undertaken for triangulation of the results. Additionally, while the conclusions are valid in the context of the Spanish banking sector, these might not be prompt to be generalised to all industries and should be addressed by cross-sector and cross-cultural studies. Finally, it was assumed that the creation of T-knowledge is similar for different actors and participants, and that their assessment could be done in the same way as evaluating electronic online services. In other words the research does not account for the possibility of actors and participants being able to consider

alternative uses of services available to them. Therefore, this assumption should be reviewed and explored further and might involve most diverse types of stakeholders whose concerns and interests might differ from those of the authors.

The findings of this study highlight the importance of managers' awareness of the concept of peripheral vision. This becomes particularly relevant when managers have the ability or need to drive the conditions and/or context where knowledge structures can be developed to increase organisational outputs. Assets such as customer capital may result from the opportunities provided by the periphery of the environment within which the organisation operates. Peripheral vision also appears to provide an interesting perspective for understanding how opportunities emerge and how they can be implemented to improve an organisation's knowledge structures and its customer capital. In addition, although much can be done to help managers make the most of their vision and adapt to any changes, this study argues that traditional concepts of managing and leading change based on knowledge management processes need to consider ACAP and T-knowledge. It may also be argued that the narrowing of peripheral vision resulting from the ageing of firms may make them even more vulnerable to competition. Firms will need to develop routines and activities in order to retain and preferably enhance their peripheral vision and hence maintain or even enhance their relational capital.

Despite the limitations outlined above, this study makes a significant contribution to the existing debate around the concept of peripheral vision and its relationship with knowledge structures. Future research might profitably sample a range of companies to investigate the balance between peripheral and focal visions or how they relate to financial performance. It therefore opens new opportunities for research that the research team is currently exploring.

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Appendix 1: Questionnaire items

| |
|---|
| **Peripheral Vision:** with respect to your organisation, indicate the extent to which you agree or disagree (1= strongly disagree and 7= strongly agree): |
| PV1: Managers seem to be open to new ideas and new ways of doing things |
| PV2: Management has tried to initiate projects and introduce innovations |
| PV3: Managers recognise the value of new information, assimilate it and apply it |
| PV4: Managers adopt the suggestions of peripheral customers in the form of new routines and processes |
| PV5: Managers are prone to collaborate with peripheral competitors and to solve problems together |
| Source: Day and Schoemaker, 2006 |
| **Potential Absorptive Capacity:** with respect to your organisation, indicate the extent to which you agree or disagree (1= strongly disagree and 7= strongly agree): |
| PACAP1: Employees at our site regularly visit other branches |
| PACAP2: We collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners). |
| PACAP3: Our unit periodically organises special meetings with customers or third parties to acquire new knowledge. |
| PACAP4: Employees regularly approach third parties, such as accountants, consultants or tax consultants |
| PACAP5: New opportunities to serve our clients are quickly understood |
| Source: Jansen *et al.*, 2005 |
| **Realised Absorptive Capacity:** with respect to your organisation, indicate the extent to which you agree or disagree (1= strongly disagree and 7= strongly agree): |
| RACAP1: Our company regularly considers the consequences of changing market demands in terms of new products and services |
| RACAP2: Employees record and store newly acquired knowledge for future reference |
| RACAP3: Our company quickly recognises the usefulness of new external knowledge to existing knowledge |
| RACAP4: We constantly consider how to better exploit knowledge |
| Source: Jansen *et al.*, 2005 |
| **Technology knowledge**: with respect to your organisation, indicate the extent to which you agree or disagree (1= strongly disagree and 7= strongly agree): |
| TK1: Our company has a large and strong network of technology suppliers |
| TK2: We have more technological knowledge that our suppliers |
| TK3: Our new products are always based on technology |
| TK4: Our company is proactive in developing new technology and applications |
| Source: Adapted from Szulanski, 1996; Sharma, 2000; Nohria & Gulati, 1996 |
| **Relational Capital**: with respect to competitors indicate the degree to which your company reached the following objectives in the last three years (1= did not reach at all and 7= reached easily): |
| RC1: The quality of the services. |
| RC2: Customer satisfaction. |
| RC3: Adaptation to changing demand |
| RC4: Giving customers faster service |
| RC5: Growth (in terms of sales), |
| RC6: Profitability |
| RC7: Productivity |
| Source: Adapted from Bueno, 1998 |

Figure 1: Selection of customers for learning
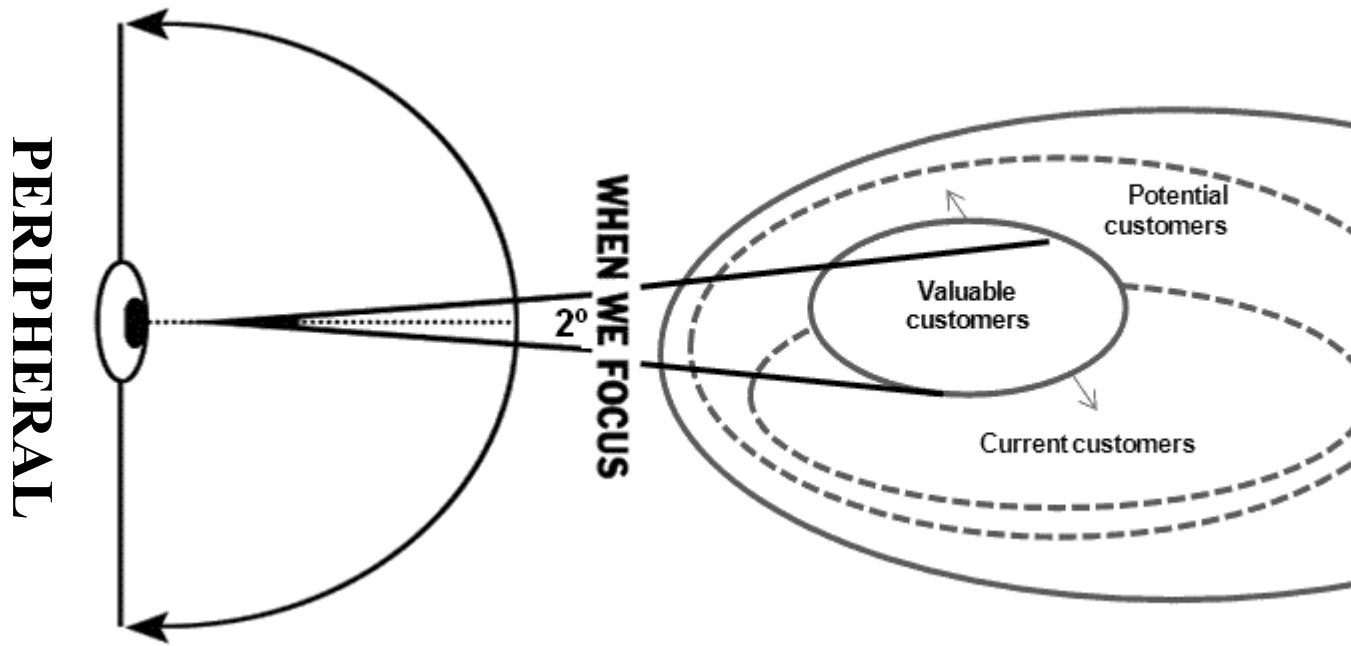
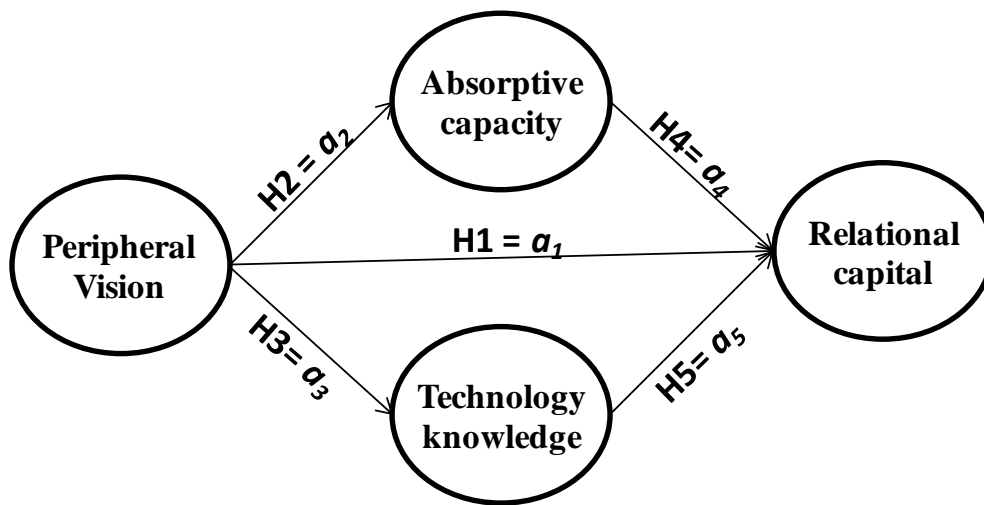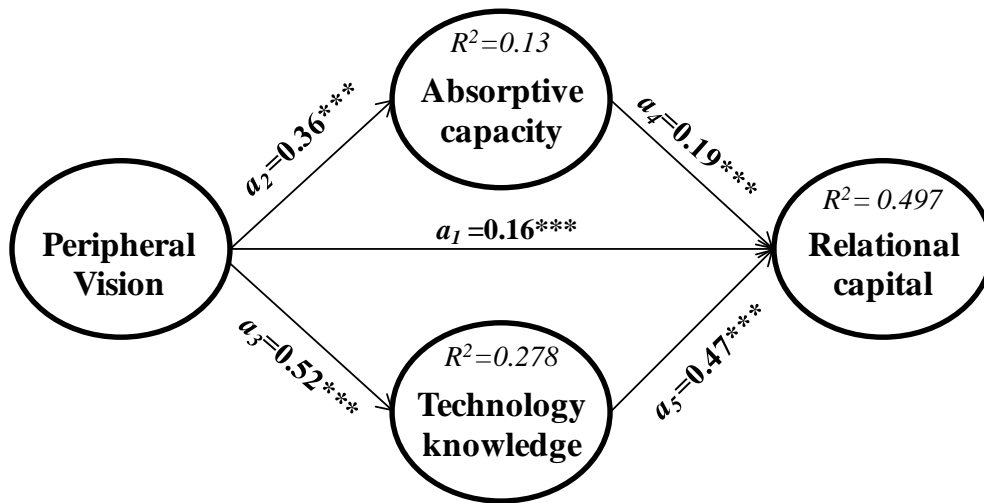Source: Own elaboration

Figure 2: The conceptual framework

Figure 3: Structural model results

Notes:
***p <.01, (based on a Student t (499) distribution with two tails). t(.01,499)=2.585711627

Table 1: Factor Loadings of reflective constructs

	PV	PACAP	RACAP	TK	RC
PV1	*0.78*	0.11	0.30	0.41	0.40
PV2	*0.82*	0.25	0.35	0.47	0.50
PV3	*0.80*	0.19	0.27	0.46	0.38
PV4	*0.70*	0.30	0.33	0.37	0.26
PV5	*0.71*	0.14	0.24	0.23	0.23
PACAP1	0.27	*0.77*	0.44	0.41	0.38
PACAP2	0.27	*0.79*	0.54	0.44	0.48
PACAP3	0.19	*0.80*	0.54	0.31	0.36
PACAP4	0.11	*0.79*	0.52	0.26	0.30
PACAP5	0.23	*0.79*	0.58	0.32	0.35
RACAP1	0.30	0.62	*0.83*	0.41	0.41
RACAP2	0.31	0.54	*0.87*	0.38	0.38
RACAP3	0.34	0.54	*0.83*	0.41	0.41
RACAP4	0.37	0.48	*0.74*	0.40	0.21
TK1	0.49	0.40	0.43	*0.89*	0.65
TK2	0.39	0.36	0.43	*0.84*	0.53
TK3	0.41	0.41	0.44	*0.87*	0.56
TK4	0.51	0.35	0.38	*0.85*	0.56
RC1	0.45	0.35	0.35	0.63	*0.81*
RC2	0.44	0.46	0.43	0.65	*0.90*
RC3	0.34	0.43	0.42	0.58	*0.80*
RC4	0.37	0.38	0.36	0.41	*0.79*
RC5	0.42	0.26	0.26	0.49	*0.76*
RC6	0.28	0.33	0.27	0.40	*0.74*
RC7	0.40	0.42	0.31	0.51	*0.83*

Table 2: Descriptive Statistics and Correlation Matrix

	Mean[a]	SD	CA	CR	AVE	1	2	3	4	5	6
1. PACAP	4.72	0.91	0.84	0.89	0.62	*0.78*					
2. RACAP	4.97	0.82	0.83	0.89	0.67	0.65	*0.81*				
3. ACAP	4.85	0.79	n.a.	n.a.	n.a.	0.91	0.90	**n.a.**			
4. PV	5.61	0.78	0.81	0.87	0.57	0.26	0.40	0.36	*0.75*		
5. TK	4.66	0.98	0.88	0.92	0.74	0.44	0.48	0.50	0.51	*0.86*	
6. RC	5.09	0.80	0.90	0.92	0.64	0.46	0.41	0.48	0.47	0.64	*0.80*

Notes:

[a] Mean = the average score for all of the items included in this measure; S.D. = Standard Deviation; CA = Cronbach's Alpha; CR = Composite Reliability; AVE = Average Variance Extracted; n.a. = not applicable. [b] They represent the dimensions of each second-order construct. The bold numbers on the diagonal are the square root of the Average Variance Extracted. Off-diagonal elements are correlations among construct

Table 3: Second-order confirmatory factor analysis of ACAP

First-order construct		First-order			Second-order	
	Indicator	Loading	*t*-value		Loading	*t*-value
PACAP R^2=0.85	PACAP1	0.77	37.38		0.92	102.34
	PACAP2	0.78	43.42			
	PACAP3	0.80	41.55			
	PACAP4	0.78	45.83			
	PACAP5	0.78	32.54			
RACAP R^2=0.81	RACAP1	0.83	50.85		0.90	86.04
	RACAP2	0.86	58.72			
	RACAP3	0.83	54.45			
	RACAP4	0.74	40.05			

Table 4: Effects on endogenous constructs

Hypotheses	Path coefficients	T values	R^2
$H_1 = a_1$: $PV \rightarrow RC$	0.16***	4.58	0.497
$H_2 = a_2$: $PV \rightarrow ACAP$	0.36***	7.82	0.130
$H_3 = a_3$: $PV \rightarrow T\text{-}knowledge$	0.52***	22.17	0.278
$H_4 = a_4$: $ACAP \rightarrow RC$	0.19***	6.82	0. 497
$H_5 = a_5$: $T\text{-}knowledge \rightarrow RC$	0.47***	14.04	0. 497

Notes:

***$p < 0.01$ (based on a Student t (499) distribution with two tails). t(.01,499)=2.585711627.

PV-Peripheral Vision; ACAP-Absorptive Capacity; RC- Relational Capital; T-knowledge-Technology Knowledge.

Table 5: Indirect effects

Indirect effects on	Point estimate	Percentile bootstrap 95% confidence interval		
		Lower	Upper	
Relational Capital				
$PV \rightarrow ACAP \rightarrow RC = a_2 \times a_4$	0.07**	0.017	0.176	Sig
$PV \rightarrow T\text{-}knowledge \rightarrow RC = a_3 \times a_5$	0.24***	0.131	0.375	Sig

Notes:

***p <0.01, **p <0.05, ns=not significant (based on a Student t (499) distribution with two tails).

t(.01,499)=2.585711627, t(.05,499)=1.964726835.

PV-Peripheral Vision; ACAP-Absorptive Capacity; RC- Relational Capital; T-knowledge-Technology Knowledge.