Dimensions and antecedents of the Absorptive Capacity, how are they related?

In a dynamic and turbulent environment, knowledge represents an essential resource for value creation and for keeping competitive advantages (Teece et al., 1997). Since a strategy based only in the internal R&D is limited in scope, the organizations need to search outside the knowledge that will help them to reach competitive advantages. It is recognized that absorptive capacity (AC) can help firms to develop this strategy, as it provides the firms with the ability to “identify, assimilate and apply external knowledge to commercial ends” (Cohen and Levinthal, 1990).

The importance of the concept has been remarkable in fields such as strategic management (Lane et al., 2006), technology management (Schilling, 1998), international business (Kedia and Bhagat, 1988), organizational economics (Glass and Saggi, 1998) and open innovation (Lichtenthaler, 2009; Spithoven et al., 2010). However despite the huge increase in the absorptive capacity literature, a lack of consensus exists in its definition, dimensions and the measurement scales (Zahra and George, 2002; Lane et al., 2006; Todorova and Durisin, 2007; Easterby-Smith et al., 2008; Camisón and Forés, 2010; Sun and Anderson, 2010; Volberda et al., 2010).

In an important contribution, Lane et al. (2006) assessed 289 articles about the concept of AC and found that most of the scholars have used this concept in a reified manner. In respond, they propose a new definition and model, helping to reconnect the concept to its roots and also including the relevant contributions made to the definition and dimension of the concept. Likewise, in a recent contribution, Volberda et al. (2010) performed a bibliometric study with which they identified which elements of AC have been used through the organization literature and the main researches gaps which need to be covered by future studies. However, none of the previews studies make a systematic assessment of the empirical support of the concept. They merely describe the way the concept has been measured, without any selection or evaluation criteria, and without explaining which of the different approaches and relations evaluated have received more empirical support.

The aim of the current study is to fill in the aforementioned gap by means of assessing the empirical support present in the AC literature to date. For doing this, we use an adapted version of the model employed by David and Han (2004) in the article “A Systematic Assessment of the empirical support for transaction cost economics” and the later used and modified by Newbert (2007) in the article “Empirical research on the
resource-based view of the firm: an assessment and suggestions for future research”. This methodology in contradistinction to the theoretical review is more systematic and explicit in the selection of the studies (David and Han, 2004). Moreover, it allows for “the mitigation of the partiality resulting from subjectivism” (Newbert, 2007). The sample search and definition was done in 6 steps: (1) Searching for relevant articles (2) ensuring the substantive relevance (3) ensuring the empirical content of the articles (4) selecting articles published in multiple journals, (5) reading abstracts (6) exploring the whole articles.

From this methodology we obtained a final quantity of 78 remaining articles. From these articles, 76% (56) evaluate AC as an independent variable and assess its effect on organizational processes, including their inputs and output. The next 22% (17) consider AC as a dependent variable and examine the main internal and external antecedents that influence the dimensions and processes of AC. The last 4% analyze the elements that moderate the relationship between the antecedents and firm’s AC.

By analyzing the 59 articles studying AC as an independent variable, we point out the number of individual test carried out for each variable, the number of tests supporting and the number of test contradicting to the theory. The articles classified in this category presented 464 individual test from which 293 (52%) were statistically significant. Similarly to David y Han (2004), we used a cut-off of p<0.05 for statistically support to homogenize the results since some academics considered significance at p<0.10 and others not considered it to values over p<0.05.

In our analysis we identified different methods used to measure AC, which depended on the way it was defined and the nature of the antecedent considered as determinant of the term. We classified them into six groups: (1) capability, (2) knowledge base, (3) human capital characteristic, (4) knowledge management activities, (5) inter organizational relationship and (6) organizational characteristic.

In spite of the widespread use of the concept in the literature, it has just received a marginal support. Among the 59 articles evaluating the effect of AC on firm’s inputs, outputs and processes, only less than half of the individual tests (51%) were empirically supported. Although the level of support seems to be low, these results are not fare from the ones obtained in others studies on the management strategic theories. For instance, David and Han (2004) and Newbert (2007), who used a similar methodology, found an empirical support of 47% and 53% for the empirical tests about the Transaction Cost
Economic theory (TCE) and the Resource Based View theory (RBV) respectively. Although the level of support achieved in a theory and another are not comparable, the above shows that our results are not atypical.

Another aspect to be underlined is that the level of empirical support changes substantially depending on the approach employed and the relationship assessed. For instances, the studies evaluating the effect of AC (measured as a capacity) on exploration processes and performance obtained an empirical support of 44% and 45% respectively. On the other hand, the studies using the knowledge based approach to analyze the above relationships, obtained an empirical support of 69% and 64%.

The previous knowledge has been considered as one of the main determinants of firm’s AC. However AC not only represents the result R&D investment or manager experience, instead exists other elements related to the environment, the process and the organizational structures which play an important role (Lane and Lubatkin, 1998; Van den Bosch et al., 1999; Lane et al., 2001; Park, D Minbaeva and T Pedersen and I Bjorkman and C F Fey and H J., 2003; Jansen et al., 2005; Lichtenthaler, 2009). According to these studies AC represents a multidimensional concept, therefore analyzing AC by considering previous knowledge as the only measure may provide a skewed view of the term.

Taking into account all of the above, it is not surprising that more frequently scholars combine different models to assess the multidimensional nature of AC. As a result, the empirical support obtained by each component will differ depending on the level of analysis (individual, intra or inter organizational) and on the variable used. For instance, the capacity approach has obtained in the last 4 years a considerable increase on the number of publications and the empirical support, which reached a minimum value of 75% for the total test examined. Likewise, there is a greater tendency to measure AC considering, apart from knowledge base, aspects like motivation, personal abilities and management mechanisms. This new guidelines have helped to confirm the multidimensional nature of AC and to show that R&D, patents and inter-organizational relationship are not enough to explain a firm’s AC.

Finally, a last aspect to underline is the high variability on the constructs used to measure AC. In the 59 articles analyzed, we indentified different measures and approaches used in order to evaluate the main components and dimensions of the term. All these represent a sample of the level of flexibility that the theory admits in its
applications and the lack of consensus still present in the literature. Moreover, the
definition of AC developed by Cohen and Levinthal (1990), leaves term limits unclear,
this resulting in scholars making use of the term according to their needs (Zahra and

In many reviews and papers it has been proposed a new re-conceptualization of the
term. However, up to date there is no consensus about the dimensions and which
element of a firm may have a deeper impact on the development of its AC. Future
studies may try to integrate the measurements identified in the present study. These
show a higher level of validity while capturing the multidimensional nature of the term.

References


Cohen WM, Levinthal DA. 1990. Absorptive Capacity: A New Perspective On

David RJ, Han S. 2004. A Systematic Assessment of the Empirical Support for


Jansen JJP, Van Den Bosch, Frans A J., Volberda HW. 2005. Managing Potential and
Realized Absorptive Capacity: How Do Organizational Antecedents Matter? Academy


833.

Lane PJ, Lubatkin M. 1998. Relative absorptive capacity and interorganizational

Lane P, Salk JE, Lyles MA. 2001. Absorptive capacity, learning, and performance in

Lichtenthaler U. 2009. Absorptive Capacity, Environmental Turbulence, and the
Complementarity of Organizational Learning Processes. Academy of Management


