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**THE STEVENS INSTITUTE OF TECHNOLOGY
WESLEY J. HOWE AWARD FOR EXCELLENCE IN RESEARCH
ON THE TOPIC OF CORPORATE ENTREPRENEURSHIP**

**ABSORPTIVE CAPACITY IN NEW VENTURES: DIFFERENCES
AMONG CORPORATE VENTURES AND INDEPENDENT VENTURES**

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ABSTRACT

This paper describes a study of the effects of venture origin on ACAP dimensions addressing two questions: how differently do corporate ventures (CVs) and independent ventures (IVs) build their ACAP? And, what are the effects of these differing ways of building ACAP on the new venture performance (NVP) and strategic variety? In answering these questions, we build on three related theoretical perspectives: resource-based view (Barney, 1991; Peteraf, 1993), knowledge-based theory (Grant, 1996), and the dynamic capabilities approach (Teece et al., 1997; Winter, 2003). Using data from face-to-face interviews and surveys on 140 new ventures, our results show that CVs primarily focus on developing the ACAP processes of acquisition and assimilation of new external knowledge when compared to IVs; and that IVs center their efforts in commercially exploiting the knowledge externally acquired. We did not find evidence of significant differences among CVs and IVs in their strategic variety. Yet, we found that an emphasis on *potential* ACAP is positively associated with the strategic variety of both CVs and IVs. Finally, our results reveal that ACAP is not directly related to NVP.

INTRODUCTION

Independent new ventures (IVs) and corporate-sponsored ventures (CVs) vary systematically in their ability to gather and use resources in building unique organizational capabilities (Miller & Camp, 1985) that can magnify differences in their performance (Shrader & Simon, 1997; Zahra, 1996). CVs and IVs are created to exploit opportunities based on new discoveries and therefore their knowledge can be a great source of strategic advantage. To remain competitive, however, IVs and CVs need to augment internal knowledge by acquiring knowledge from external sources such as customers, alliance partners and suppliers. To do so, the knowledge based theory of the firm (KBT) suggests that new ventures should develop the requisite absorptive capacity (ACAP) to capture and exploit external knowledge and use it to create value. We know little about the differences that exist between CVs and IVs in their ACAP and how these differences might influence their performance.

Absorptive capacity refers to firms' ability to acquire external knowledge and put it into commercial use (Cohen & Levinthal 1990). ACAP can help new ventures build and quickly use their knowledge base, especially in dynamic environments (Teece et al., 1997). With the flow of external knowledge, ACAP becomes a dynamic capability that allows new ventures to evolve, succeed and prosper (Lane et al., 2006; Van den Bosch et al., 1999; Zahra & George, 2002). The literature does not tell us much about how new ventures develop their ACAP and kept it current (e.g., Hayton & Zahra, 2005). New ventures have to develop the routines and processes needed to build ACAP. New ventures, however, often lack the experience, resources and connection to do so. ACAP has multiple dimensions and therefore it is important to see how new ventures balance building these dimensions.

Our work contributes to research on ACAP and new ventures by proposing two research questions. First, how differently do CVs and IVs build their ACAP? Second, what are the effects of these differing ways of building ACAP on the new venture outcomes? In answering these questions, we build on the

Resource-Based View of the firm (RBV) (Barney, 1991; Peteraf, 1993) and more specifically on an extension of this theory: the dynamic capabilities approach (Teece et al., 1997; Winter, 2003). The underlying assumption of the RBV is that firm competitive advantage lies in its resource base and in the way in which these resources are managed. CVs and IVs are able to count on different resources in building their ACAP and the managerial decisions that both types of firms will take to leverage these resources for developing ACAP may also vary. Accordingly, we believe that CVs and IVs will develop and deploy their ACAP differently. Further, we expect that these differences in ACAP will affect a number of its outcomes, mainly the new venture performance (NVP) and the number of strategies that they will use to compete –what we name strategic variety (Miller, 1993).

The answers to these questions will extend both the literature about ACAP and the literature about new ventures. Our study contributes to the literature on new ventures in three ways. First, by analyzing the major sources of differences between these types of firms: in terms of resources and capabilities. Second, by showing how these differences may affect their strategic choices, specifically the way they build their ACAP, an area that requires research attention. Third, by increasing our knowledge about the determinants of new venture performance. Further, using new ventures as a setting for our analysis, we advance the literature on ACAP in various ways. The first is by shifting the emphasis from ACAP routines and processes to the mechanisms needed to execute ACAP four processes, since new ventures have not have enough time to develop routines, offering new insights about the content of ACAP. The second is by bringing the notion of CVs and IVs into the study of ACAP permits the analysis of the importance of the knowledge possessed by the organization for ACAP, and specifically for the outcome of this capability. Overall, our study empirically analyzes the part of the ACAP theoretical discussion related to the effects of the organizational memory. The distinction of new ventures based on their origin helps us take into account differences in the declarative memory of the firm, the memory of what the firm already knows (Moorman & Miner, 1998). Besides, the study of the diverse ways CVs and IVs' managers can make discretionary use of their ACAP to obtain divergent outcomes, undercover the importance of the procedural memory of the firm, the memory for how things are done (Moorman & Miner, 1998). This study, therefore will clarify how differences in the firm's organizational memory –declarative and procedural- affect ACAP development and outcomes.

ABSORPTIVE CAPACITY DEVELOPMENT IN CVs VS IVs

The development of a dynamic capability for ACAP is essential for CVs and IVs, since it helps them to be prepared for change. This is useful in the dynamic environments where new ventures often compete, where change occurs frequently (Teece et al., 1997). Besides, this established structure and processes allows new ventures to forecast technological trends and to take advantage of emerging opportunities before its rivals can recognize them (Cohen & Levinthal, 1994). It also favours learning and knowledge accumulation, possibly increasing the new venture's knowledge base. Therefore, CVs and IVs need to establish the routines and processes necessary to develop their ACAP in pursuit of competitive advantage.

In this study we assume that ACAP is as a dynamic capability (Lane et al., 2006) and depending on the knowledge base of the firm –its organizational memory-. Organizational memory is both an individual- and organizational-level construct that refers to stored information from an organization's history that can be brought to bear on present decisions (Walsh & Ungson; 1991). It consists of internal “storage bins” that retain decision information. The information stored in this memory is acquired from decisions made and problems solved in the past, apart from the knowledge obtained from external sources in deploying a firm's ACAP. Moorman and Miner (1998) focus on two types of stored knowledge: (1) procedural memory, in the form of skills ad routines and (2) declarative memory, in the form of more abstract or theoretical information.

Since, CVs and IVs inherit their founders' knowledge and experience they may vary significantly in their declarative memory. In view of that, we believe that CVs posses higher levels of declarative memory

than IVs, due to the amount of knowledge and experience transferred to them by their parents; a fact that will affect ACAP development. However, the knowledge IVs' founding entrepreneurs' have may be specific to certain area: such as marketing, technology or manufacturing, but hardly probable to all these areas at once. Likewise, since there is managerial discretion, CVs and IVs may activate differently their ACAP, based on their resources and goals; suggesting that differences in their procedural memory may exist. Integrating existing literature on ACAP (Cohen & Levinthal, 1990; Lane et al., 2006; Van den Bosch et al., 1999), we believe that it has four components: acquisition, assimilation, transformation and exploitation of external knowledge. Our view departs in significant ways from Zahra and George's (2002) description of the four abilities that comprise their components of ACAP, with the distinction that we see them as four processes. See Figure 1.

Acquisition Process and Assimilation Processes: Potential ACAP

With the acquisition, we refer to a firm's process for identifying, valuing and acquiring externally generated knowledge that is critical to its operations (Zahra & George, 2002). Assimilation refers to the firm's processes and routines that allow it to analyze process, interpret and understand the information obtained from external sources (Kim, 1998; Szulanski, 1996). Both processes comprise what Zahra and George (2002) label potential ACAP (PACAP).

Several reasons suggest that CVs may emphasize more the acquisition and assimilation of external knowledge than IVs, as indicated in Figure 1. First, CVs have many incentives to invest in acquiring and assimilating external knowledge. For the corporate sponsor, new ventures are a major source of new product ideas (Hisrich & Peters, 1986). The ventures offer the sponsor a window on emerging technologies, create new revenue streams and lead changes in the business concept (Winters & Murfin, 1988). Thus, CVs may see the acquisition of external knowledge as necessary to create new products. If CVs are willing to survive, they will have to act accordingly in developing their ACAP; they have to pay especial attention to the acquisition and assimilation of external knowledge. Second, a firm's existing knowledge base often determines which knowledge a firm is able to "see"; which areas of knowledge it will identify and value. Some portion of the firm prior knowledge should be very closely related to the new knowledge in order to facilitate these activities (Lane & Lubatkin, 1998; Szulanski, 1996). Given that CVs benefit from the resources -especially knowledge-, transferred by the parent organization, we expect the breath of the CVs' declarative memory to be broader than that of IVs. This wide declarative memory will permit CVs to acquire and assimilate more diverse external knowledge than IVs, since the chances to find new external knowledge related to the existing knowledge and understanding it will be higher for CVs than for the IVs. Third, in line with this argument, the level of R&D spending will also facilitate new external knowledge acquisition, by augmenting the knowledge base of the firm (Cohen & Levinthal, 1990; Mowery, Oxley & Silverman, 1996). Provided that R&D activities require sustained investments, CVs can use the funds and specific facilities and equipment of their parent corporations. However, IVs must be conservative in their R&D spending since they may find difficult to obtain funds from external capital sources, due to the risk associated with these activities (Zahra, 1996). Finally, firms seek to access new external knowledge, resources, markets or technologies by different means ranging from licensing and contractual agreements to interorganizational relationships as alliances. Several factors suggest that CVs will be more inclined to use these external sources of knowledge than IVs. CVs have high incentives for acquiring and assimilating external knowledge, mainly because their internal knowledge is not enough to offer the many products they serve to their broadly defined markets (Zahra, 1996). Further, by having a broad knowledge base -declarative memory- CVs may be better off in understanding new knowledge; that is in the assimilation process. For these reasons, IVs' incentives to invest in acquiring and assimilating external knowledge are scarce in comparison to CVs. Therefore we posit the following:

H1a: CVs will surpass IVs in the emphasis given to the ACAP process of acquisition of new external knowledge.

H1b: CVs will surpass IVs in the emphasis given to the ACAP process of assimilation of new external knowledge.

Transformation and Exploitation Processes: Realized ACAP

Transformation denotes a firm's process to develop and refine those routines that facilitate combining existing knowledge with the newly acquired and assimilated knowledge. It is in these varied activities that serve as the genesis of new competencies (Lane et al., 2006; Zahra & George, 2002). Subsequently, the exploitation process refers to a firm's process that refines, extends and leverages existing competencies or creates new ones by incorporating acquired and transformed knowledge into its operations (Zahra & George, 2002). It is the process through which the firm extracts the potential value embedded in the current stock of knowledge, commercially using it. Both processes comprise what Zahra and George (2002) label realized ACAP (RACAP).

As indicated in Figure 1, IVs are expected to emphasize the transformation and exploitation processes of external knowledge more significantly than CVs. Entrepreneurs establish new ventures for many reasons. Sometimes, they develop new ventures to exploit their own discoveries or, simply, to keep them employed. Other times ventures are formed to create and pursue opportunities resulting from technological advances or to create wealth for the owner (Zahra, 1996). This idea is usually in the mind of the entrepreneur; still the goal of the IVs is to commercially exploit this idea. In so doing, IVs need to combine its existing knowledge with externally generated knowledge, to adjust the idea to the market needs. Given this focus, IVs will emphasize leveraging the routines and processes necessary for transforming and exploiting that external knowledge and finally succeeding in bringing to the market a new product. Further, there are other factors that support the idea that IVs will emphasize the transformation and exploitation of external knowledge more than CVs. Mainly, the type of R&D activities accomplished by both types of ventures. Existing research shows that IVs centre their efforts on Applied R&D, whereas CVs direct their resources toward more Basic R&D (Zahra, 1996). Applied R&D is directly linked with the exploitation process of ACAP, since it stresses the near-term commercial application of scientific findings.

Zahra (1996) found that IVs emphasized the use of Internal R&D more than CVs and argued that the IVs owners tended to possess technological expertise, which helped them to skip the outsourcing of this competence, therefore allowing them to control the innovation process. These Internal R&D activities centre on the creation of new ideas, which in turn are fostered through the combination of existing knowledge with new sources of knowledge (Galunic & Rodan, 1998). Therefore, it implies the deployment of the transformation process of ACAP. In sum, IVs show more incentives to invest in transforming and exploiting external knowledge in comparison to CVs. Therefore, we argue:

H2a: IVs will surpass CVs in the emphasis given to the ACAP process of transformation of new external knowledge.

H2b: IVs will surpass CVs in the emphasis given to the ACAP process of exploitation of new external knowledge.

DIFFERENCES AMONG CVs AND IVs ON ACAP OUTCOMES

The next step in the analysis is to discuss the consequences that the absorbed resources would have for the new venture. The traditional view of ACAP links it to value creation through innovation (Cohen & Levinthal, 1990; Lane & Lubatkin, 1998). Yet, on the whole, the aim of the development of a firm ACAP is to commercially apply the knowledge that is externally acquired (Cohen & Levinthal, 1990) and create new technical and organizational knowledge. The success of the commercial outputs and the new knowledge created developing and producing them may influence the firm's future ACAP and thus the strategies that firm's managers adopt (Lane et al., 2006). This means that the evolution of the firm's ACAP influence the strategies to compete that are viable for the firm. For that reason, in this study we try to shift the focus of analysis from innovation to the broader strategic repertoire of activities that firms employ to compete, what Miller (1993) name strategic variety.

We see the concept of strategic variety as an indicator of breaking firm path-dependence. As such, this concept can enrich the notion of ACAP (Cohen & Levinthal, 1990; Van den Bosch et al. 1999), by empirically testing the conditions under which ACAP permits to break path-dependence, and enhance strategic variety. Additionally, the study of strategic variety in new ventures is important, even though the study of strategic variety has been limited to established companies (e.g. Miller & Chen, 1996). Prior researchers have apparently assumed that new ventures do not suffer from the dysfunctional effects of path dependencies (Zahra, Keil & Maula, 2005). Hence, it is intriguing to know if young firms can alter their strategic variety or enhance it in such a short period. Finally, allowing firms to learn “to do something quite different”, the ultimate aim of ACAP development is to increase overall firm performance (Cohen & Levinthal, 1990; Lane et al., 2006). Hence, we also include in the study the analysis of the impact of ACAP development on new venture performance (NVP).

Strategic Variety

The terms strategic simplicity and variety are referred to a firm strategic repertoire of activities: its set of competitive actions. Some companies compete in a comprehensive and multifaceted way, paying close attention to costs, quality, marketing, expansion, and innovation. Others embrace much simpler competitive strategies and concentrate on just one or two of these elements (Miller et al., 1996). Miller (1993) presents three sets of reasons for this simplicity or variety: managerial, cultural and structural factors. Managerial factors affect variety or simplicity mainly by the scope of their search, such as the wider the search the higher the strategic variety. IVs' managers tend to narrow their searches to the specific area where the firm is created (Knight, 1989). In contrast, CVs' managers are expected to conduct broader searches since they are means for renewing established organizations (Zahra & Covin, 1995). In turn, a culture is a constellation of basic views and assumptions that gives an organization its identity, both to its members and outsiders (Deal & Kennedy, 1982). The clearer the goal of the firm, the higher its strategic simplicity. IVs are supposed to have a clear dominant goal (Knight, 1989), namely, to be the pioneer of the product or technology for whose exploitation the venture has been created (Shrader & Simon, 1997). In contrast, since CVs represent opportunities to create or renew competitive advantages for established firms by expanding their pools of competences (McGrath, 1995), they foster different ways of seeing and doing things, instead of a single view. Finally, with regard to the structure, Miller (1993) argues that the more an organization's goals and tasks are factored into routines and programs, the more these restrict and homogenize the range of things its managers think about, thus leading to simplicity. Since routines develop overtime (Nelson & Winter, 1982), due to their young age both types of new ventures are unlikely to have developed strong routines. However, in the case of CVs, the way of doing things is inherited, partly from their parent firms (Burgelman, 1983). Thus, CVs may deploy many of the routines and processes that their parent firms already possess. Moreover, the ongoing relationship that exists with the parent corporation may decrease their ability and/or willingness to build competencies unrelated to the needs of the parent firm (Parhankangas & Arenius, 2003). Taking into account managerial, structural and cultural factors, IVs are expected to fall in simplicity more than CVs. However, considering structural factors, CVs seem to be simpler than IVs in their competitive repertoire. In sum, balancing the arguments above we posit:

H3: The strategic variety of CVs will surpass that of IVs.

New Venture Performance

The literature on the performance variations among CVs and IVs is limited and inconclusive. In fact, there are two competing perspectives when comparing the relative advantages of CVs and IVs, both of which have been only partially tested (Shrader & Simon, 1997). On one side, there are researchers that suggest that CVs outperform IVs (e.g., Hines, 1957; Zahra, 1996). On the other side, there are researchers that propose that IVs exhibit higher performance than CVs (e.g. Van de Ven et al., 1984; Weiss, 1981). The arguments made to support both positions tend to be based on the benefits that CVs and IVs have. For the CVs, the arguments are mainly based on their ability to gain resources from their parent firms

(Zahra, 1996). For the IVs, the advantages are essentially accrued to their flexible organizational structures (Zahra & George, 1999), their social capital and the alignment of their objectives (Knight, 1989). Although CVs and IVs struggle to achieve market acceptance and superior performance (Shrader & Simon, 1997), CVs usually have less urgency in obtaining revenues, since they can count on the financial support of their parent companies (Block & MacMillan, 1993). In contrast, IVs need to make profits in their markets very fast to maintain their venture capital. This prediction is illustrated in Weiss (1981) study that concludes that on average, CVs take twice as long to reach profitability and end up half as profitable as IVs. For these reasons, we believe that considering their young age:

H4: The performance of IVs will surpass that of CVs.

ABSORPTIVE CAPACITY'S OUTCOMES LINKS IN CVs AND IVs

Absorptive Capacity and Strategic Variety

New ventures face different challenges depending on their internal characteristics and the context in which they compete. New ventures have many competitive alternatives, to address these challenges. A new venture's actual response would range from the choice of simpler concentrated actions to broader more complicated sets of procedures. Therefore, below we argue that this choice would be influenced by a new venture's ACAP. One of the central variables that influence a firm's breaking firm path-dependence and inducing strategic variety is the knowledge base of the firm and its evolution and trajectory overtime (Cohen & Levinthal, 1990; Van den Bosch et al., 1999). It appears that the wider the firm's declarative memory (what it knows) the higher the chances to create a quantum change. If the firm has a broad declarative memory is more likely that two different knowledge vectors might intersect, leading to the creation of new knowledge (Rosenberg, 1982). In contrast, the chances to create a quantum change are limited when the knowledge base of the firm is related to a sole area of knowledge. Accordingly, the larger the knowledge base that the firm had acquired and assimilated overtime -the higher the firm declarative memory-, the greater its ability to compete in a multifaceted way leveraging the knowledge that they seize. In contrast, the higher the efforts in transforming and exploiting the knowledge that the new venture already has, the higher its chances to narrow the strategic elements it uses to compete. The goal of transforming and exploiting external knowledge is to obtain commercial results (Lane et al., 2006). If these results have a positive effect on performance they may reinforce the deployment of the processes of transformation and exploitation. In fact, Miller (1993) argues that successful organizations are expected to become simpler overtime, instead of becoming more complex. Based on the arguments above, we expect CVs to deploy a wide range of strategies in their competition, given that they centre their efforts in acquiring and assimilation external knowledge. Whereas, since IVs focus on the transformation and exploitation of their existing knowledge, we expect them to deploy a simpler strategy grounded in the actions that have already proven to be successful. Therefore, we posit the following:

H5: An emphasis on PACAP will be positively associated with the CVs' strategic variety.

H6: An emphasis on RACAP will be negatively associated with the IVs' strategic variety.

Absorptive Capacity and New Venture Performance

Our discussion also suggests that ACAP will influence the performance of CVs and IVs differently, because they develop their ACAP in differing ways, based on the resources and capabilities they can count on for that aim and driven by their unique goals. As indicated in Figure 1, IVs are likely to reach high levels of performance by focusing their efforts on transforming and exploiting the knowledge that they already possess in order to bring into the market new product and technologies urgent and certainly. Investing in transforming and exploiting external knowledge is predicted to enhance performance and yield a competitive advantage (Zahra & George, 2002). This is important in the case of IVs that are pressured to obtain early benefits, in order to survive. In contrast, since the vast asset base of the parent organization may serve to buffer the CVs from initial risk or failure, this type of ventures do not

experience such pressure for immediate results. Hence, CVs emphasis on acquiring and assimilating external knowledge allows them to renew their knowledge base (Zahra & George, 2002) but hinder immediate commercial results; and yield uncertain benefits in the medium/long run. Therefore we argue:

H7: An emphasis on RACAP will be positively associated with the Performance of IVs.

H8: An emphasis on PACAP will be negatively associated with the Performance of CVs.

METHOD

Sample and Data

To test the hypotheses we conducted a survey in a sample of 140 Spanish new ventures. The study's population was limited to firms younger than eight years old (McDougall et al., 1992) located in seven regional clusters in Spain. The identification of the regional clusters was done based on academic publications on the topic and was confirmed by discussions with several Spanish academic experts in regional economics. Data were collected between September and December 2006 through personal interviews with each firm's highest senior executive or the responsible of R&D.

Measurement and Validation of Constructs

The study uses valid scales that were published in previous research. However, appropriate scales for ACAP were not available. Even though Jansen and colleagues (2005) have recently developed a scale for ACAP, we concluded that it was inappropriate for the context of our study. Jansen et al. (2005) scale is developed and used in the context of a single large corporation with multiple subunits, whereas the focus of our study is independent companies. However, many of the items of Jansen et al. (2005) scale were included in our study. The initial scales were tested in 12 in-depth interviews with NV managers, who were asked to complete the questionnaire and indicate any ambiguity regarding the phrasing of the items.

Independent Variables: NV Origin and ACAP development (emphasized processes and dimensions). We collected information about the origin of the venture directly asking respondents, as Mc Dougall and colleagues (1992), Shrader and Simon (1997) and Zahra (1996) did previously. We have attempted to capture the four ACAP processes using 24 items (an average of six items per component). Items were extracted from the literature (e.g., Garud & Nayyar, 1994; Jansen et al., 2005; Szulanski 1996; Zahra & George, 2002). We asked respondents to indicate the extent to which their companies emphasized the various activities associated with ACAP processes. Items followed a five-point scale with responses ranging from "not at all used" (coded 1) to "very often used" (coded 5).

Prior to conducting a confirmatory factor analysis (CFA) of the items pertaining ACAP processes, we ran an exploratory factor analysis (EFA) to assess the measures agreement with theoretical measures. In so doing, we used principal component analysis with a varimax rotation, where the items loaded in six factors: two factors for the process of acquisition of new external knowledge, with four and two items each ($\alpha=.865$; $\alpha=.778$), one factor with three items for the assimilation process ($\alpha=.91$), two factors for the transformation process, with nine and two items each ($\alpha=.873$; $\alpha=.781$), and one factor with four items for the exploitation process ($\alpha=.908$)¹. Next, we confirmed the dimensionality of the ACAP construct with CFA, whose results indicated that the aforementioned six factors model fitted the data well. The analysis of the composite reliability of each factor was acceptable (recommended minimum value of each item loading ≥ 0.7). Then, we analyzed convergent and discriminant validity valuing the mean extracted variance of each factor (MEV) (recommended minimum value ≥ 0.5) and applying the procedure of Fornell and Larcker (1981). Finally, the goodness of fit of the model was confirmed with several indexes ($df=231$, $\chi^2=.03906$, goodness-of-fit index [GFI]=.845, comparative fit index [CFI]=.974, root-mean-square error of approximation [RMSEA]=.035).

Dependent Variables: NV Performance and Strategic Variety. Recognizing that new venture performance (NVP) is multidimensional in nature, we have used two objective measures averaged over

the three-year period following the survey data collection: average return on equity (ROE) and average sales growth. To complement objective performance measures, obtained from the SABI data base when possible and self reported when not, a scale with subjective questions about new venture performance was also used. This index is taken from Zahra (1996) and considers the managers' satisfaction with their venture's performance. The five-item subjective scale captured the profitability (ROA, ROE and net profit margin) and the growth (e.g., sales and market share growth). For this construct we also run an EFA followed by a CFA, resulting in a construct with one factor including the three profitability items (ROA, ROE and net profit margin) ($\alpha=.8$). All the checks described for the ACAP construct were run for the subjective performance factor, generating satisfactory results regarding the validity and reliability of the construct and for the goodness of fit of the measurement model ($df=8$, $\chi^2=.42698$, goodness-of-fit index [GFI]=1, comparative fit index [CFI]=.996, root-mean-square error of approximation [RMSEA]=.008). Therefore, the responses to the three items were averaged to develop the subjective performance index used in the analysis.

Strategic Variety was measured by the four indexes developed by Miller and Toulouse (1998): Range, Dominance, Variance and Count². All the indexes for this construct are based on a comprehensive list of methods for creating competitive advantages via differentiation, cost leadership and focus. Thirty four competitive methods fall within these three categories. Managers were asked to rate these methods on a five-point scale ranging from: 1 "not a part of our strategy at all" to 5 "a key part of our strategy". A complete description of the indexes is presented in the Appendix.

Control Variables: The analyses also controlled for several variables that affect the venture ability to obtain and deploy resources: organizational age, company size, percentage of employees with university degrees, and knowledge base of the regional Cluster. Company age was measured by the number of years the venture had been in existence. In turn, size was measured by the number of full-time employees of the venture. Finally, the knowledge base of the regional cluster in which the new venture is located is measured with Gatignon et al. (2002) scale for radicalness of innovations, but adapted for innovations by the overall population of the cluster. Again, CFA was conducted and the results yielded one factor with four items (one item was dropped from the original scale) and showed that the model fitted the data moderately well ($df=1$, $\chi^2=.17484$, goodness-of-fit index [GFI]=.997, comparative fit index [CFI]=.997, root-mean-square error of approximation [RMSEA]=.078). Finally, the four items responses were averaged to develop the index used in the analysis.

To test hypotheses, the t-test contrasted CVs and IVs on age, size, percentage of employees with a University degree, ACAP processes, NVP and strategic variety indexes. Next, a logistic regression analysis was run to validate previous results. Separate regressions analyses were then run for CVs and IVs to determine the associations between ACAP dimensions and variety indexes and between ACAP dimensions and NVP strategic by venture type. Finally, Chow tests were used to determine if regression pairs were significantly different between CVs and IVs.

RESULTS

Results of the t-tests: CVs versus IVs

Table 1 presents the means for the CVs' and IVs' age, size, percentage of employees with a University degree, ACAP processes, NVP and strategic variety indexes. The two types of ventures differed significantly in their size and percentage of employees with a University degree (at $p<.001$ and $p<.01$). Whereas IVs were smaller than CVs, they surpassed IVs in the percentage of employees with a University degree. The two groups of new ventures also differed in three of the four ACAP processes (all at $p<.01$); the exception was the transformation process (both transformation indexes weren't significantly different across groups). As predicted in hypotheses H1a and H1b, CVs significantly surpassed IVs in the emphasis given to the ACAP processes of acquisition and assimilation of new external knowledge. Also, as predicted in H2b, IVs significantly surpassed CVs in the emphasis given to the ACAP process of exploitation of new external knowledge. The tests also showed that none of the two ventures types

differed significantly across the four strategic variety indexes. This was unexpected given that IVs and CVs tend to have different resources and capabilities (Zahra, 1996; Shrader & Simon, 1997). Finally, none of the objective measures of NVP (ROE and sales growth) was significantly different between IVs and CVs. Although IVs outperform CVs on those two performance measures, these disparities were not significant. Yet, there were significant differences between CVs and IVs in the subjective index of performance at $p < .01$. These results partially support H4, which posits that IVs will surpass CVs in their relative performance.

Logistic Analysis: ACAP development in CVs versus IVs

Given that we obtained partial support for the study predictions, and that the t-test has the problem of not taking into account covariations among variables, a logistic analysis was carried out to validate the previous results, overcoming the t-test limitations. The results of the logistic regression analysis (Logit) are displayed in Table 2; showing that the most important significant variables (in descending order) were: the process of exploitation of external knowledge (positive), second index for the acquisition process (negative), the percentage of employees with a university degree (positive), the subjective performance index (positive), the first index for the acquisition process (negative) and the size (negative). In sum, logit results are consistent with the t-test results, indicating that CVs surpass IVs in the emphasis given to the ACAP process of acquisition (H1a) and that IVs surpass CVs in the emphasis given to the ACAP process of exploitation (H2b). Furthermore, the results partially support H4, predicting that the performance of IVs will surpass that of CVs (for the subjective index of performance).

The goodness of fit of the Logit model is measured with several indicators: (1) a small value of (-2LL); (2) high values of “various pseudo R^2 ”; and (3) no significance of the Homer and Lameshow statistical contrast, which indicates that there are statistically no significant differences between the observed and predicted classifications. Finally, a key test of the power of Logit is its ability to correctly classify the ventures into CV versus IV types, a value that reached 75.7%; a high hit ratio.

Multiple Regression Analysis: ACAP development in CVs versus IVs

Strategic Variety

The results for strategic variety are shown in Table 3. ACAP dimensions explained from 8.7% to 50.9% in the strategic variety measures for CVs and from 17.5% to 29.5% for IVs. H5 suggested that an emphasis on PACAP will be positively associated with the strategic variety of CVs. The results for three of the four strategic variety indexes support this hypothesis: the PACAP dimension of CVs was negatively associated with the dominance and variance indexes and positively with the count index; hence, showing that this ACAP dimension was positively associated with the strategic variety of this type of ventures. Moreover, our results show that those CVs that emphasize RACAP will have lower strategic variety, for the range and variance indexes. H6 suggested that an emphasis on RACAP will be negatively associated with the strategic variety of IVs. Although the regression results do not show any significant relationship between RACAP dimension of IVs and any strategic variety index, they show significant associations between PACAP and both the dominance and count indexes. The results further show that there is a negative association with the dominance index. Conversely, there is a positive association with the count index. Both relationships suggest that IVs' PACAP is positively associated with strategic variety, as in the case of CVs.

New Venture Performance (NVP)

The results for NVP appear in Table 4. None of the regressions was significant, explaining the variance in NVP.

Chow Test Results: CVs versus IVs' Performance

The Chow test provides a test of whether the set of linear regression parameters (i.e., the intercepts and slopes) is equal across groups (Maddala, 1977). Therefore, we used the Chow test to compare pairs of

regression equations (e.g., ROE by CVs versus IVs). All the four regression pairs related to strategic variety were significantly different among both groups of ventures ($p < 0.5$ or minus). However, none of the three regression pairs related to NVP were significantly different between CVs and IVs.

DISCUSSION AND CONCLUSION

Our study contributes to research on ACAP and NVs in several ways. Our results reveal that the differences in terms of resources and capabilities between CVs and IVs affect their strategic choices, specifically the way they build their ACAP. Overall, our research indicates that CVs primarily focus on developing the ACAP processes of acquisition and assimilation of new external knowledge when compared to IVs. This result reveals the importance of the knowledge possessed by the organization for ACAP, specifically the value of the declarative memory of the firm -the memory of what the firm already knows (Moorman & Miner, 1998) - for being able to acquire and assimilate new knowledge. Given that CVs seem to have a broader breath of declarative memory than IVs, our results prove Cohen and Levinthal's (1990) idea that what the firm already knows determines what the firm will be able to learn.

Our results also verify that IVs center their efforts in commercially exploiting the knowledge externally acquired -exploitation process of ACAP- as compared to CVs, reflecting the urgency of IVs to bring new products to the market. Nevertheless, in our sample CVs and IVs did not differ in the emphasis given to the ACAP process of transformation of external knowledge. Transformation is the most important and complicated process of ACAP (Zahra & George, 2002), therefore, both types of companies have to put special emphasis in developing the routines and capabilities needed for an effective deployment of this process, as it is shown in the high values assigned to the transformation measures (see Table 1). The reason for not finding differences in the ACAP process of transformation for CVs and IVs could be that for the transformation process the differences may lie on factors such as firm age and size and not as much on venture origin. The reduced dimension of both CVs and IVs facilitates cross-functional abilities (Zahra & Nielsen, 2002), information processing (Garud & Nayyar, 1994) and coordination between units (Iansiti & Clark, 1994), that harness transformation. Moreover, Garud and Nayyar (1994) emphasize that the capacity of transformation can be essential for the smaller companies, especially venture start-ups (p.379), because are likely to disappear if they are not able to maintain their technological development. Galunic and Rodan (1998), also posit that knowledge recombination is more difficult to achieve in older firms. In the same direction, Zahra and Nielsen (2002) stress the importance of the transformation for NVs and establish a similarity between bisociation, which determines the transformation process, and the entrepreneurial action, distinctive of new ventures.

We did not find evidence of significant differences among CVs and IVs in their strategic variety. This lack of diversity in strategic variety by venture origin may be because there are many other important factors determining firm strategic variety apart from the origin of the venture, such as ACAP. In fact, our results support this argument, since we found that an emphasis on PACAP is positively associated with the strategic variety of both CVs and IVs. Although our initial hypotheses were in different directions for CVs and IVs: expecting that an emphasis on PACAP would be positively associated with the strategic variety of CVs and that an emphasis on RACAP would be negatively associated with the strategic variety of CVs, our results verify that only one of the ACAP dimensions -PACAP- positively affects strategic variety regardless the type of venture. More intriguing, our results confirm that an emphasis on RACAP will reduce strategic variety, but only in the case of CVs. Therefore, it might be that IVs counter to what is expected, when centering on transforming and exploiting knowledge do not higher their chances to narrow the strategic elements they use to compete, as is the case with CVs. In sum, we can argue that organizational learning may indeed play a major role in shaping competitive strategy (Miller & Chen, 1996); in such a manner that the larger the knowledge base that the firm had acquired and assimilated overtime by deploying its PACAP -the higher the firm declarative memory- (Moorman & Miner, 1998), the greater its ability to compete in a multifaceted way leveraging the knowledge that they seize -its strategic variety-. Accordingly, our results not only illustrate the conditions under which ACAP permits

to break path-dependence, and enhance strategic variety, but also manifest that they are the same for CVs and IVs.

Besides, the study results show that the level of perceived or subjective performance of IVs will surpass that of CVs indicating that the differences in resources and capabilities among CVs and IVs not only affect the way they build their ACAP, but also affect its performance. This conclusion is interesting since the literature on NVP is limited and inconclusive and yet there is not consensus about what type of venture outperforms the other or even if that is the case. Nevertheless, we can't affirm that IVs outperform CVs given that this is not true for the objective performance measures of the study: ROE and sales growth. Further and most interesting, our results consistently reveal - for all our performance measures- that ACAP is not related to NVP. We believe this is a very appealing finding since in the literature of ACAP a recurrent belief is that an effective ACAP development will increase firm performance (Lane et al., 2006). Yet, in the theoretical literature the effect of ACAP on performance is usually mediated by other organizational outcomes such as innovation (Kim, 1998), strategic flexibility (Zahra & George, 2002) and other knowledge or commercial outputs (Lane et al., 2006); being argued that ACAP create certain knowledge outputs probably in the form of capabilities which in turn affect firm performance. In fact, empirical studies about the effects of ACAP have never established a direct relationship between ACAP and performance. Therefore, our results empirically confirm that ACAP does not have direct effects on the performance of NVs. Indeed, we need to be cautious in generalizing this finding to older and more established firms. This may be the case for NVs because they may have not been able to extract the value of this capability in such a short period of time, yet we could see ACAP direct results in older firms. Without doubt, it is intriguing to find that an emphasis on RACAP does not lead to higher performance, not even in terms of sales growth. One possible explanation could be that these young companies are most of the time developing and launching new products to the market, which may be on early stages of their life cycle. Considering that the average age of the NVs of our sample is 4.5 years and that we are gathering performance information of the previous three years it is plausible to think that these NVs still haven't had the time to exploit their products.

Overall, our results reveal that CVs and IVs differ in their ability to develop and manage potential and realized ACAP; yet do not diverge in their ability to create value from their ACAP. This study, therefore clarifies how differences in the firm's organizational memory –declarative and procedural- affect ACAP development and outcomes.

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NOTES

1. The acquisition process yields two factors; the first one with four items gathering information about the firm practices for acquiring knowledge from the environment through their daily practices (e.g. contact with clients, suppliers, and competitors) and the second one with two items with information about joint research consortia with other firms or public research centers. In turn, the two factors that conform the transformation process have nine and two items respectively; the first factor gathering information about mechanisms used to redefine existing knowledge and combining it with new external knowledge; and the second factor including knowledge integration mechanisms.

2. Range represents the gap between a firm's most and least favoured bases of competing; it is computed as the difference between a firm's category with the highest average score and its category with the lowest average score. Dominance is the degree to which one type of competitive method dominates all others; it is reflected by the importance attributed by the CEO to the most important category of methods expressed as a ratio of the average importance score accorded by the CEO to the entire sets of methods. Variance is the discrepancy between favoured and de-emphasized methods of competition. The lower these three indexes, the higher the firm strategic variety. Count represents the number of competitive

methods that the CEO deems to be an important part of the firm arsenal; the higher the index, the higher the firm strategic variety.

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Figure 1: Model of Venture Origin, Absorptive Capacity Emphasized Processes and Outcomes

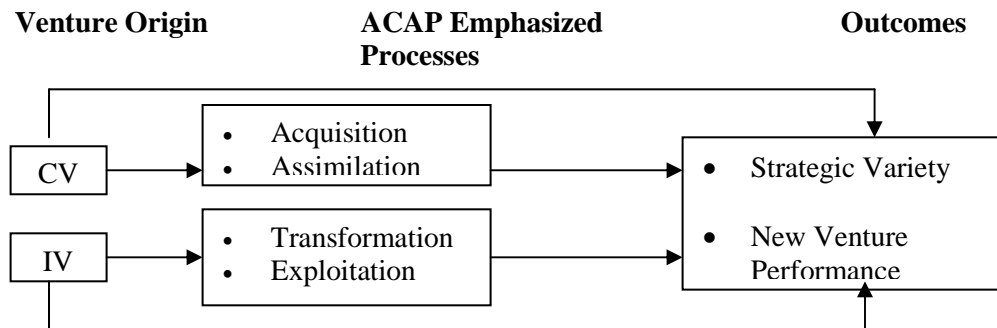


Table 1: T-test of ACAP Processes, Strategic Variety and Performance

| Variables | | Venture Types | | t |
|--------------------------------|------------------------------|-----------------------|-------------------------|----------|
| | | Corporate (n = 68) | Independent (n = 72) | |
| <i>General characteristics</i> | Age | 4.57 | 4.65 | .187 |
| | Size | 53.32 | 20.14 | 3.747*** |
| | % employees U. degree | 42.07% | 54.84% | -2.096** |
| | Acquisition: Index1 | 3.62 | 3.26 | 2.303** |
| <i>ACAP Processes</i> | Index2 | 2.97 | 2.47 | 2.283** |
| | Assimilation | 1.58 | 1.41 | 2.267** |
| | Transformation: Index1 | 3.56 | 3.48 | .540 |
| | Index2 | 4.14 | 3.94 | 1.186 |
| | Exploitation | 3.18 | 3.59 | -2.128** |
| | Range | 2.27 | 2.11 | 1.459 |
| <i>Strategic Variety</i> | Dominance | 1.31 | 1.29 | .994 |
| | Variance | .76 | .70 | 1.580 |
| | Count | 25.29 | 25.56 | -.285 |
| <i>New Venture Performance</i> | ROE (%) | 13.62% | 18.25% | -.530 |
| | Sales Growth (%) | 30.65% | 23.93% | .977 |
| | Subjective Performance Index | 10.66 | 11.76 | -2.093** |

**p< .01

***p< .001

Table 2: Logistic Regression Analysis of ACAP, Strategic Variety and NVP: CVs versus IVs

| Variables | Expected Sign | β | Wald statistic |
|------------------------|---------------|---------|----------------|
| Age | - | -.105 | 1.002 |
| Size | - | -.019 | 4.215* |
| % employees U. degree | + | .025 | 7.144** |
| Acquisition: Index1 | - | -.977 | 5.375* |
| Index2 | - | -.725 | 9.153** |
| Assimilation | - | -.047 | .004 |
| Transformation: Index1 | - | -.014 | .001 |
| Index2 | - | -.516 | 2.920 |
| Exploitation | + | .864 | 9.835** |
| Range | - | -.574 | .228 |
| Dominance | - | -5.028 | 1.993 |
| Variance | - | 1.329 | .127 |
| Count | + | -.006 | .006 |
| ROE | + | .007 | 3.245 |
| % Sales Growth | + | -.004 | .515 |
| P Subjective Index | + | .188 | 6.290* |

+ a indicates that IVs will have a higher score on the variable than CVs, and vice versa.

*p< .05

**p< .01

Table 3: ACAP Dimensions of CV versus IV Strategic Variety: Regression Results

| Variables | Corporate Ventures | | | | Independent Ventures | | | |
|-------------------------|--------------------|-----------|---------------------|----------|----------------------|-----------|---------------------|--------------------|
| | Range | Dominance | Variance | Count | Range | Dominance | Variance | Count |
| Age | .118 | -.750 | .052 | 1.390 | -1.104 | -.299 | -1.063 | .463 |
| Size | -.493 | -.819 | .622 | .239 | .860 | .692 | 1.295 | -.912 |
| %empl. U.d | -.820 | .295 | -.789 | -.699 | .909 | 2.112* | .951 | -2.292* |
| Cluster K | -.626 | -2.041* | -1.311 | 3.217** | -1.441 | -1.354 | -.842 | 1.903 ⁺ |
| PACAP | -1.611 | -4.125*** | -1.904 ⁺ | 3.432*** | -1.702 ⁺ | -2.777** | -1.885 ⁺ | 2.659** |
| RACAP | 2.099* | -.423 | 2.253* | 1.301 | .013 | -.816 | -.331 | 1.488 |
| R ² | .087 | .468 | .127 | .509 | .175 | .236 | .185 | .293 |
| Adjusted R ² | -.002 | .416 | .041 | .461 | .099 | .165 | .110 | .228 |
| Df | 2.288 | 5.476*** | 2.758 ⁺ | 15.16*** | 1.774 | 6.381*** | 2.591 ⁺ | 7.84*** |

⁺p< .10

*p< .05

**p< .01

***p< .001

Table 4: ACAP Dimensions of CV versus IV Performance: Regression Results

| Variables | Corporate Ventures | | | Independent Ventures | | |
|-------------------------|--------------------|--------------|----------|----------------------|--------------|--------------------|
| | ROE | Sales Growth | PS Index | ROE | Sales Growth | PS Index |
| Age | -.337 | .310 | .380 | 1.088 | .693 | -.136 |
| Size | -1.102 | -.345 | 1.383 | .672 | .704 | 1.783 ⁺ |
| % U. degree | -.839 | .112 | .071 | -.788 | 1.233 | .571 |
| Cluster K | .257 | -1.158 | 1.292 | .713 | .224 | .991 |
| PACAP | 2.035* | .876 | .153 | .796 | -.646 | -.513 |
| RACAP | -.400 | -.827 | 1.119 | -1.312 | -.815 | -.115 |
| R ² | .094 | .044 | .123 | .072 | .047 | .062 |
| Adjusted R ² | .005 | -.050 | .037 | -.014 | -.041 | -.024 |
| Df | 2.647 | .451 | 1.188 | .892 | .950 | .202 |

⁺p< .10

*p< .05