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THE ROLE OF ENTREPRENEURSHIP ON THE FOUNDATIONS OF DYNAMIC CAPABILITIES

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ABSTRACT

This work investigates the antecedents and consequences of dynamic capabilities using data from Portuguese and Brazilian firms. Specifically the influence of entrepreneurship as an opportunity sensing base, the effect on human resources (HR) capability to reach those opportunities, and finally knowledge management (KM) consequences on firm performance.

Using a two-country questionnaire, four organizational capabilities are examined, and the link to value creation is established: entrepreneurship capabilities, knowledge management, human resources management capabilities and strategic decision flexibility. The main objective of this research is the operationalization of a stream of thought on dynamic capabilities.

To analyze our model, we have chosen to apply a path analytic technique. This multivariate analysis methodology is regularly used for empirically examining sets of relationships represented in the form of linear causal models, and allows the direct, indirect and total effects. We present the operationalization of an aggregate construct in this field thus contributing to develop empirical research of dynamic capabilities. Measures were adapted to reflect dynamic decision making.

The results show that dynamic capabilities are a complex set of capacities conjugated in sensing, seizing, and reconfiguring processes. Managerial implications for these two countries are discussed.

KEYWORDS

Entrepreneurship, dynamic capabilities, organizational capacities, value creation, human resources management, knowledge management, strategic decision flexibility, sensing, seizing, reconfiguring.

INTRODUCTION

Decisions related to firm strategic resources constitute a key issue in the organizational field (Moliterno & Wiersema, 2007; Teece, 2014). The rapid evolution of the field after Teece *et al.* (1997) seminal work on dynamic capabilities reflects the relevance of this subject on capability debate in a context of “volatile markets, environmental uncertainty, and change” (Schreyögg & Kliesch-Eberl, 2007:914). As broadly recognized, the resource-based view doesn’t explain competitive advantage in more complex and changing environments because of its static nature (e.g., Zander & Kogut, 1995; Danneels, 2008). Therefore, the fast-growing field of dynamic capabilities is considered a new class of organizational abilities allowing firms to respond to a new market (King & Tucci, 2002). Dynamic capabilities “include the sensing, seizing, and transforming needed to design and implement a business model” (Teece, 2017:4).

Entrepreneurship is also a fast-growing academic field within management science. In the last thirty years, researchers have borrowed theories from other disciplines to study this phenomenon (Zahra, 2007) in different perspectives (see Table 1). Current research in this field opens pathways to other research fields like dynamic capabilities.

Insert Table 1 here

Lumpkin and Lichtenstein (2005) stress out that the primary reason for firms to engage in entrepreneurial activities is the possibility of increased performance through strategic renewal and creation of new venture opportunities. Seizing these opportunities opened up by a dynamic environment implies that entrepreneurial firms acquire the capability to reconfigure their existing asset-base and processes (Zahra *et al.*, 1999). Teece (2007:1319) also suggests that “enterprises with strong dynamic capabilities are intensely entrepreneurial” and Newey and Zahra (2009) underlines the interaction between entrepreneurship and dynamic capabilities. The antecedents of dynamic capabilities can be perceived at the individual entrepreneur level (Mudalige, Ismail & Malek, 2016). As such, dynamic capabilities are guided by a proactive entrepreneurial logic and perform a more expansive or critical role in the adaptation of firms than previously considered by other researchers.

Strategic flexibility also has a significant influence on strategic management research. Since the initial contribution from Harrigan (1980), the concept of strategic flexibility has consistently been perceived by strategists as the (dynamic) capability to match a broad range of demands in various competitive markets. Firms diversify its products and markets (Sanchez, 1995; Teece, 2014) and its resources and competitive actions in a fast pace (Nadkarni & Narayanan, 2007). In additionally, “it represents the means through which organizations maintain coalignment with shifting competitive, technological, and social environments which occasionally pose threats to their continued survival and effectiveness” (Kraatz & Zajac, 2001:632).

Human resources capabilities also have a crucial role in developing strategic flexibility (Rindova and Kotha, 2001) because they have the “ability to intentionally shape their fates, despite restrictions imposed by existing structures” (Salvato, 2003:101). Change can result from organizational routines (Eisenhardt & Martin, 2000), learned and stable patterns (Zollo & Winter, 2002) or firms’ abilities or capacities (Teece, 2007). This enlarges the perspective about the kind of organizational activities with impact on strategic flexibility and reinforces the link between human resource management and strategic management on strategic flexibility (Teece, 2007).

Human resources capabilities are also fundamental for knowledge management development. Zollo and Winters’ (2002) knowledge evolution cycle start from a set of ideas proposed by individuals or groups that address recurrent problems with alternative approaches or achieve new solutions to new challenges.

Our study aims to respond to the need for a deeper exploration of the link between high order capabilities, operational capabilities and performance (Teece, 2016, 2017). As such, this research aims to operationalize a stream of thought on dynamic capabilities. By considering the existence of two levels of capabilities (Winter, 2003), the purpose of our research is, through empirical observation, identify the role of specific dynamic capabilities like entrepreneurial management and strategic flexibility on operational capabilities, analyzing their effect on performance.

We posit that an integrated approach can be considered linking (a) entrepreneurship that enhances the firm’s ability to recognize market opportunities; to (b) strategic flexibility and human resources capabilities that effectively support management dynamism; and (c) knowledge management as a key contributor to firm (positive) performance in a competitive environment. This approach is consistent with Teece’s (2007) microfoundations perspective of dynamic capabilities.

MODEL DEVELOPMENT

Dynamic capabilities development path

The link between dynamic capabilities and competitive advantage has been object of significant scholar debate. Early proposals explore the direct link (e.g. Teece *et al.*, 1997; Zollo & Winter, 2002). However, for others, sustainable competitive advantage depends only indirectly on dynamic capabilities. Resource configurations created by dynamic capabilities constitute the source of long-term sustainability of competitive advantages (e.g. Eisenhardt & Martin, 2000; Zott, 2003). We follow Helfat and Peteraf's dynamic capabilities development path that "requires a more general understanding of the distinction between firm performance and competitive advantage" (Helfat & Peteraf, 2009:96).

The qualities and the mechanisms by which dynamic capabilities operate remain poorly described (Moliterno & Wiersema, 2007; Wollersheim & Heimeriks, 2016). Dynamic capabilities are also dependent on the environmental context in which they are operated (Girod & Whittington, 2017). Additionally, the conjugation of continuous renewal and patterned architecture of organizational capabilities imply a deeper knowledge from a theoretical and practical point of view (Schreyögg & Kliesch-Eberl, 2007). On this vein, dynamic capabilities research suggests the need to describe processes in detail, including their consequential order of implementation (Teece *et al.*, 1997). According to Teece (2007), the microfoundations can be disaggregated in three components: sensing, seizing and reconfiguration, evolving from his previous work to integrate, build, and reconfigure sequence (Teece *et al.*, 1997). As such, a capability-based theory of strategy "should identify the choices available to firms and the consequences of those choices under different competitive circumstances" (Pisano, 2017, p.2). In the same stream of thought, Eisenhardt and Martin (2000) proposed structuring dynamic capabilities starting from gaining (e.g. knowledge creation routines), reconfigure and integrate resources, and release routines that deploy resources that no longer provide competitive advantage. In the same way, Zott (2003) designate variation (through imitation and/or experimentation) as the first stage, followed by selection and then retention of a particular resource configuration. The fourth stage in this 'system of evolutionary

learning' is related to market assessment. Another and simpler sequence is proposed by Makadok (2001): resource picking (decision) and capability building (implementation).

Figure 1 provides an overview of the theoretical multistage model described in this section, and Table 1 describes the constructs' definitions. The first stage is related to sensing market opportunities, emphasizing the role of entrepreneurial managers that have the ability to identify those opportunities (Augier & Teece, 2008). Consequently, entrepreneurial capabilities allow firms to develop 'seizing and managing threats' or 'reconfigure and integrate' mechanisms. Strategic flexibility in an entrepreneurial context is crucial to orchestrate organizational assets, but simultaneously HR must possess the capabilities to support dynamic decision making and achieve a substantial role on strategic implementation.

On the sequence, related to Teece's (2007) dynamic capabilities foundations, these factors contribute to the continuous alignment and realignment of specific tangible and intangible assets. The alignment should equally take in consideration the changing demands (Girod & Whittington, 2017). In this context, knowledge management seems critical to dynamic capabilities (Zollo & Winter, 2002). In our model, knowledge management is linked to strategic flexibility and HR capabilities because "[w]ith intangible assets being critical to enterprise success, the governance and incentive structures designed to enable learning and the generation of new knowledge become salient" (Teece, 2007: 1339). Eisenhardt and Martin (2000) support that knowledge management can be considered a dynamic capability. (i) Because it contributes to change first order capabilities, by integrating organizational knowledge (Teece, 2014) through a process of asset combination (Sheng, 2017) and (ii) because it accumulates experience establishing a development path (Helfat & Peteraf, 2009). Our model reflects knowledge management influence both on other organizational capabilities development and on performance.

Insert Table 2 here

Insert Figure 1 here

Entrepreneurship, knowledge management and strategic management flexibility

Knowledge management is linked to strategic flexibility in our model. Being flexible is not only about velocity (Doz & Kosonen, 2007), is also about being a smart actor, shaping the industry future (Teece, 2014). In rapid changing business environments, routines are substantially simple and partially structured, permitting the development of dynamic capabilities through self-organization (Rindova & Kotha, 2001) on an “relatively stable activity dedicated to process improvement” (Danneels, 2008:340).

Strategic choice has long been considered the essence of strategic management (Porter, 1991), thus the crucial role of decision making in the process of acquiring superior competitive performance. In this context, the availability and the allocation of valuable resources affect firms’ strategic position (Schreyögg & Kliesch-Eberl, 2007). In this research, the key issue remains the firm’s capacity of producing the strategic response to the market and therefore remaining flexible, fast and smart (Doz & Kosonen, 2007). Besides the early adoption of successful new products or improved business models and the early adoption of efficiency-gaining process technologies, strategic flexibility permits firms to develop “organization combinations that enable economies of scale and knowledge synergies” (Baum & Wally, 2003: 1109).

Whenever HR provide firms with the right level of strategic flexibility support (e.g. individual participation on decisions or collective competences suggested by Zollo & Winter, 2002), knowledge management capabilities increase. Consequently, the amount of good decision making raise and performance grows.

Accordingly, entrepreneurship establishes a basis for a more flexible strategic decision making, facilitating managers change acceptance and willingness to act. Concomitantly, organizational structure must allow managers to acknowledge market dynamics and assess firm capabilities’ towards competitive advantage. Thus, we hypothesize:

H1: Knowledge management provides the rationale through which entrepreneurship contributes to strategic flexibility.

H6: The higher the strategic flexibility the higher firm’s performance.

Entrepreneurship, Knowledge Management and HR Capabilities

Entrepreneurship competencies (e.g. innovation, risk taking, information and resources brokering, new ideas sponsoring and championing, tolerance to failure, as stated by Hayton & Kelley, 2006) are strongly dependent on the entrepreneur's human capital profile (Priede-Bergamini *et al*, 2019). Entrepreneurial management is equally important to dynamic capabilities since it is very hard for rivals to replicate the idiosyncrasy, routines and culture embedded in it (Teece, 2014; 2017).

In a competitive global market, success requires the development of new products and services based on 'system capabilities' that enable knowledge exchange between organizational units to promote innovation (Sheng, 2017). Dynamic capabilities also contribute to "new organizational forms and business models, driven by an intensely entrepreneurial genre of management constantly honing the evolutionary and entrepreneurial fitness of the enterprise" (Teece, 2007:1346). This entrepreneurial capability must be complemented by a team qualified to respond, create relational assets and share knowledge as antecedents of competitive advantage (Dyer and Singh, 1998). Furthermore, HR practices are found to have an important influence on knowledge management capabilities (Martinez-Conesa, Carayannis & Carayannis, 2017). Additionally, firms with high dynamic capability conditions are more likely to use their resources more efficiently, take more appropriate action sequences and display more extensive deliberation in action (Wollersheim & Heimeriks, 2016). Swoboda and Olejnik (2016) observed entrepreneurial orientation mediates the relationship between scanning, planning and international performance. Furthermore, dynamic capabilities are expected to play a role in creating, maintaining, bridging, and disrupting institutions (Gölgeci, Larimo & Arslan, 2017). In this construct, knowledge has an important role on the development of these operating routines (Zollo & Winter, 2002). As such:

H2: Knowledge management provides the rationale through which entrepreneurship contribute for HR Capabilities on supporting dynamic decision making

HR Capabilities and dynamic decision making

Considering that dynamic capabilities' core consists in changing "key internal components of the firm" (Barreto, 2001:261), and these are structured through learning (Zollo & Winter, 2002), trial and error, improvisation, and imitation (Zahra *et al.*, 2006), the role of HR practices on capabilities development is emphasized. On this vein, we focused our research in two aspects: First, in HR role on organizational learning and knowledge. The HR role on competence to build competences (Danneels, 2008) is proposed by several scholars. HR practices affect organizational social climate, a knowledge exchange and combination facilitator (Collins & Smith, 2006). The social and behavioral framework in capabilities development functions as a repository of historical experience and organizational learning (Schreyögg & Kliesch-Eberl, 2007), establishing the basis for the development of a collective competence (Zollo & Winter, 2002). HR function is also important to establish a common goal that improves organizational consensus and attention on innovation (Sheng, 2017). This leads to knowledge articulation, a solid antecedent of dynamic capabilities since they are "treated as a set of routines guiding the evolution of a firm's resource configuration" (Zott, 2003:97), and assuming "the existence of a set of rules underlying day-to-day conduct sometimes constitutes the basis for change and transformation" (Salvato, 2003:102). Second, HR serve as a basis for strategic flexibility. By integrating distinct foundations that are difficult to develop and deploy (Teece, 2007) dynamic capabilities require complex managerial and organizational abilities or 'higher-level' capabilities (Winter, 2003) or substantive capabilities (Zahra *et al.*, 2006). Dynamic capabilities are built and embedded within the organization, not acquired in the market (Makadok, 2001). These capabilities are likely to be path dependent routines (Eisenhardt & Martin, 2000; Helfat & Peteraf, 2009) that integrate past experience (Schreyögg & Kliesch-Eberl, 2007).

Strategy is a value creating resource especially in business environments with high levels of uncertainty and pace of change (Kylaheiko *et al.*, 2016). By recognizing the inherent complexity of dynamic capabilities, managers must deal with the paradox of combining continuous change with more stable organizational capabilities (Schreyögg & Kliesch-Eberl, 2007). Previous research indicates the accumulation of valuable resources is a barrier to an adaptive strategy (Kraatz & Zajac, 2001). According to Schreyögg and Kliesch-Eberl (2007) the solution consists on developing capability monitoring procedures, an important part of strategic control. This

means that top management should be continuously involved on tracking and honing activities and core micro-strategies recombination (Salvato, 2003). In this view, strategic flexibility and HR are consistent with Teece (2007) perspective on (micro)foundations of long-run enterprise success. In sum, “dynamic capabilities may generate strategic flexibility” (Rindova & Kotha, 2001:1275).

In our construct we assume strategic decision flexibility depends not exclusively on resource flexibility but also in terms of mobility, especially technology and people based assets (Rindova & Kotha, 2001) and relational capital (Clauss, Spieth & Kesting, 2018). The HR role, as explained above, is also critical when it is embedded in an organizational culture that supports practices of continuous change. In this case, organizations are more likely to reach superior returns from learning (Zollo & Winter, 2002). Thus, on dynamic capabilities’ combination of foundations, HR importance can be considered at two levels - knowledge management and strategic decision flexibility - and we hypothesize:

H3: Strategic decision flexibility positively affects HR Capabilities

H4: HR Capabilities supporting dynamic decision making positively affect firm performance

Knowledge management and firm performance

Several studies highlight knowledge impact on firm performance (cf. Strenge & Rank, 2018). For example, “knowledge codification processes have been shown to be strongly related to performance in these conditions” (Zollo & Winter, 2002:348). Tanriverdi (2005) describes the origins of that benefit: cost reduction through synergies and increased value proposition. Collins and Smith (2006) provided evidence of HR moderating effect on performance through the impact on knowledge and organizational social climate. Specific studies apply the same findings about knowledge effect on performance in marketing (Hess & Lucas, 2004), information technology (Tanriverdi, 2005) and innovation (Sorescu *et al.*, 2003). Thus, we posit:

H5: Knowledge management capabilities positively affect firm performance

METHOD

To test our hypotheses, we began using literature-based insights to structure each of the five construct dimensions: entrepreneurship, strategic decision flexibility, HR Capabilities supporting dynamic decision making, KM and firm performance. A preliminary survey was developed and evaluated by two professors of marketing and strategy, followed by a face-to-face pretest with two groups of four top managers, one from Portugal and another from Brazil. These countries were selected to provide cultural, geographic and economic diversity to our sample. The survey was refined according to the pretest and feedback results. Specifically, some terms were standardized to present a more coherent questionnaire.

Sample and research procedures

Questionnaire was ‘in hand’ delivered to participating firms and data collection was strictly surveyed and controlled. Confidentiality was assured, and an executive summary of the results was promised to ensure a higher rate of return. We chose general or marketing directors because they are deemed to be more informed about the overall firm strategy, marketing and organizational decisions, direct competitors, and firm performance than other executives.

It included micro firms (less than 10 employees and turnover \leq € 2 m), small firms (10 to 49 employees and turnover \leq € 10 m) and medium-sized firms (50 to 249 employees and turnover \leq € 50 m)¹. For those who responded positively (315 companies), a meeting was scheduled, and an in-house questionnaire application was conducted in each of the sample companies.

As in comparable studies about dynamic capabilities (Kusunoki *et al.*, 1998; Menguc & Auh, 2006; Yalcinkaya *et al.*, 2007), respondent firms were from several industries. Our sample included 85 respondents (28.1%) from manufacturing industry, 125 (41.4%) from retail, and 92 (30.5%) from services.

Data collection was conducted in the context of a research project on dynamic capabilities composed by three teams, one located in Portugal and two other based in Brazil. The focus was

¹ According to EU recommendation 2003/361.

to increase understanding and knowledge on dynamic capabilities foundations. Secondly, we also intended to explore differences between Brazilian and Portuguese firms on this subject.

Construct measures

The six hypothesized relationships shown in Figure 1 were tested with measures selected from literature review. Entrepreneurship was measured by adapting Hult *et al.* (2003) five item scale. As examples of options, we have: ‘we believe that wide-ranging acts are necessary to achieve our objectives’ and ‘We have a strong proclivity for high-risk projects’.

For strategic management flexibility we adapted Baum and Wally (2003) five item scale, with options like ‘Our firm must frequently change its products and practices to keep up with competitors’ or ‘Actions of competitors are quite easy to predict’, and others related to business environment change.

For performance we used Katsikeas *et al.* (2006) customer satisfaction and financial performance scales. Customer satisfaction measurement considers value added perception and customer retention. Financial performance also uses a 4 item scale evaluating manager’s perception of profitability evolution (as a percentage of sales), ROI, ROS, and the reaching of financial goals. For knowledge management, Tanriverdi’s (2005) 12 items scale was used. This scale considers three components: product, customer and managerial knowledge management capabilities. Finally, to measure HR ability to support organization flexibility we adopted Hult *et al.* (2003) organizational learning scale.

We modified the scales to address firm evolution, considering a multi-item scale for each construct, using a 5 point Likert-type scale. Basically, each respondent was asked to indicate the current situation of the firm when compared to competition, such that 1 = Much Worst and 5 = Much Better. This modification intended to measure a dynamic perspective of each construct, as suggested by Laaksonen and Peltoniemi (2018).

Questionnaire response

Firms were located nationwide, in both countries, and selected randomly using reliable, complete and accurate directories of Portuguese and Brazilian firms. We have excluded 13 questionnaires with incomplete data and obtained a final sample of 302 valid questionnaires.

Analysis of the model

To analyze our model, we have chosen to apply a path analytic model, once this multivariate technique is regularly used for empirically examining sets of relationships represented in the form of linear causal models, and allows an analysis of the direct, indirect and aggregate effects (Ruiz, 2000; Skrandal & Rabe-Hesketh, 2004). Before applying the path analytic model we have used Cronbach's alpha coefficient to measure the model's internal consistency and all measurements indicated that using means of latent variables would be acceptable to produce uni-dimensional variables (see Table 3).

RESULTS AND DISCUSSION

The model presented in Figure 2 shows a good fit for the empirical data. The observed Chi square was .435, degree of freedom $df=1$, p value=.509 and RMSEA=.000. According to the rule of thumb for RMSEA, the model indicates a close approximate fit. Other additional goodness-of-fit indices (CFI=1.000; NFI=.999; GFI =.999) present all a good fit. Hoelter's critical N index for .05 was 2657.00 which means that the sample data is adequately represented in the model.

Insert Figure 2 here

Results and data analysis

We used SPSS and AMOS to run the empirical tests. As can be seen in Table 3, all correlations are significant at .01 level and their strength vary between a minimum of .417 for the variable

pair ‘knowledge management – performance’ and a maximum of .693 founded in the variable pair ‘strategic decision flexibility - human resources capabilities’.

Insert Table 3 here

Figure 2 shows that the standardized path coefficient for ‘Entrepreneurship’ and ‘Knowledge Management’ relationship is the highest coefficient found (.640) with 41% of variance accounted for by its predictor, suggesting a strong positive relationship between these two variables as supported by Mudalige, et al., (2016). A strong positive relationship was also found between ‘Human Resources Capabilities’ and ‘Strategic Decision Flexibility’ (.51). We highlight the influence of ‘entrepreneurship’, ‘knowledge management’ and ‘strategic decision flexibility’ as predictors, accounting for 56% of performance variance. Other interesting path coefficients are ‘entrepreneurship – strategic decision flexibility’ and ‘HR management capabilities – performance’. The first one suggests ‘entrepreneurship’ as a basis for ‘strategic decision flexibility’, as proposed by Kylaheiko *et al* (2016). The second reinforces the importance of HR in general firm performance and integrates in our model the seizing perspective proposed by Teece (2007).

‘Performance’ is explained in 40% by ‘strategic decision flexibility’, ‘knowledge management’ and ‘HR management capabilities’.

The other path coefficients are not so strong (see Figure 2) and the results show two weak relations, respectively ‘Entrepreneurship – Strategic Decision Flexibility’ and ‘Entrepreneurship – Human Resources Capabilities’. This result supports our hypothesis, however we must note the values for H4, H5 and H6 are weak and against our expectations. Since entrepreneurship and strategic decision flexibility are considered dynamic capabilities they must be considered in a long term perspective (Sheng, 2017), because “if a firm’s dynamic capabilities cannot be readily imitated by rival firms, they may be a source of sustainable competitive advantage” (Peteraf, Di Stefano & Verona, 2013: 1395). Therefore, they must work together to “build astute bundling or orchestration of resources” (Teece, 2014: 14), resulting in a capabilities cumulative process (Pisano, 2017).

Table 5 shows the values obtained for the standardized effects (direct, indirect and total) for each variable. As can be observed, ‘entrepreneurship’ causes an indirect effect that is not negligible in

'performance'. 'Knowledge management' presents either a direct effect or an indirect effect on 'performance', although values can be considered low. Regarding the variable 'Strategic Decision Flexibility', the impact on performance is essentially indirect. This result is an example of the broad debate in the literature concerning dynamic capabilities direct link to performance. One perspective is that dynamic capabilities affect performance indirectly (Protogerou, Caloghirou & Lioukas, 2011), because they change "a firm's bundle of resources, operational routines, and competencies, which in turn affect economic performance (Zott, 2003: 98). The other perspective suggests a direct link (cf. Teece et al., 1997; Makadok, 2001), because it "is intended to explain firm-level success and failure, competitive advantage, and private wealth creation" (Barreto, 2010: 263). The primary goal of this article was to investigate the relationships between 'Entrepreneurship', 'Knowledge Management', 'Strategic Decision Flexibility', 'Human Resources Capabilities' and 'Performance'. According to the results, all of our hypotheses proposed in the theoretical are supported.

The secondary goal of this research was to test the fit of our model. The empirical test showed that this model is robust and permits to validate the proposed theoretical model.

CONCLUSIONS

The main contribution of our research consists in the operationalization of a stream of thought on dynamic capabilities: the accumulation of several characteristics orchestrated to build firm ability to develop simultaneously change and competitive sustainability behaviors. In this vein, contrary to earlier approaches, defending a more simple and direct perspective of the concept (Eisenhardt & Martin, 2000; Teece, 1997), it is suggested that dynamic capabilities represent a complex sequence of foundations (Teece, 2007; 2014), experience, and knowledge accumulation that represent a history that influences subsequent development (Helfat & Peteraf, 2009). In the same vein, more recent RBV publications recognize that the link between firm resources and performance is more complex than anticipated, depending on the influence of several factors (Andersén, 2011). Accordingly, our model considers opportunity sensing as a basis for managing and seizing capabilities, which corresponds to the sequence proposed by Teece (2007). The first

capability is materialized through ‘entrepreneurship’ and the former ones integrate ‘knowledge management’, ‘human resources management’ and ‘strategic flexibility’.

Our model also produces some evidence on dynamic capabilities and how they behave according to the degree of entrepreneurship. Findings also provided evidence that ‘entrepreneurship’ has a strong direct effect on ‘knowledge management’ and that ‘knowledge management’ acts as a moderator in the relationship between ‘entrepreneurship’ and ‘strategic decision flexibility’, and in the relationship between ‘entrepreneurship’ and ‘HR management capabilities’. Thus, ‘entrepreneurship’ has a weak direct effect on ‘strategic decision flexibility’ and ‘HR management capabilities’ but has a strong indirect effect on these variables. In our view, it seems that ‘entrepreneurship’, seen as ‘entrepreneurial capabilities’, not only provides the crucial basis to sensing and seizing opportunities in the market but also produces the knowledge to be managed in the succeeding stage of the firm growth process, confirming Strenge & Rank’s (2018) results. At this stage is necessary flexibility in the decision-making to exploit the opportunities and changes in the human resources management capabilities to respond to changes and threats in the market.

Managerial implications

This work reveals the importance of resources and capabilities for long-term development, a critical issue in an increasing competitive global market. The organization transformation into a dynamic and adaptable entity, able for competitive sustainability, involves recognizing the strategic role performed by the accumulation and orchestration of various capacities to combine flexibility with the imperative need of developing organizational routines that incorporate best practices in business activities.

Consequently, managers should encourage the development of an entrepreneurial spirit, providing momentum and context. For the development of dynamic capabilities, this spirit must be conducted taking into account the possible interactions with knowledge management, incorporating routines and benchmarks of best practice for developing human resources skills to sustain more flexible and dynamic business practices.

Taking into account the results of the study, managers should establish a flexible long-term strategy that encourages entrepreneurship and market sensing opportunities. This is the basis for

defining or restructuring the bundle of resources and capabilities of the organization. This capability to orchestrate will be the most important and the hardest to imitate. As such, human resource management practices, especially operational capabilities and in the empowerment of knowledge management constitute key areas to invest. The essential issue is the enhancement of organizational routines. Nonetheless, incorporating experience and developing procedures to sense opportunities and make the strategy more flexible will allow a broader focus on performance sustainability.

Limitation and future research

The indirect link to ‘performance’ was taken into account and empirically analyzed. In fact, the weaker relation with ‘performance’ can be explained because the time frame wasn’t considered. According to Helfat and Peteraf (2009), dynamic capabilities must be analyzed in a development path perspective because current performance is the result of previous decisions and actions. Our questionnaire supported only partially this dynamic perspective.

The environmental dynamics is a relevant dimension to understand the role and effectiveness of dynamic capabilities in developing a sustainable competitive advantage (Winter, 2003; Barreto, 2010; Wollersheim & Heimeriks, 2016; Teece, 2014; 2016). This study emphasizes future research to explore the moderating effect of the environmental context both on the relationship between higher order and operational capabilities. The relationship between these capabilities and performance is another path to explore. Our study addresses two countries; a broader country base allows including other variables in our model, like culture, competitive environment and governmental issues.

This research also emphasizes the need for researchers to examine other mediating effects. Specifically, we suggest examining internal capabilities with mediating effect, such as combinative capabilities (Sheng, 2017), knowledge management infrastructure (Cepeda & Vera, 2007), knowledge combination capability (Zheng, Zhang and Du, 2011) or entrepreneur age, as suggested by Priede-Bergamini *et al* (2019).

Finally, in our model, ‘knowledge management’, ‘strategic decision flexibility’ and ‘HR management capabilities’ account for 40% of the variance of ‘performance’. Future research is encouraged to further develop our model, considering other sensing and seizing variables.

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Table 1 - Perspectives in the study of entrepreneurship

<i>Major focus</i>	<i>Authors</i>
theoretical antecedents	Bygrave and Hofer (1991); Gartner (1985); Sharma and Chrisman (1999)
external environment and implications	Becherer and Maurer (1997); Burgelman (1985); Covin and Covin (1990); Stevenson and Gumpert (1985); Zahra (1993); Zahra and Neubaum (1998)
entrepreneur's type and behaviour	Brockhaus (1987); Ciavarella <i>et al.</i> (2004); Collins and Moore (1970); Cooper <i>et al.</i> (1988); Dodd and Anderson (2007); Hodgetts and Kuratko (1995); Kollmann <i>et al.</i> (2007); Maxon (1986); McGrath <i>et al.</i> (1992); Miner (1990); Mitchell <i>et al.</i> (2002a, 2002b); Montagno <i>et al.</i> (1986); Palich and Bagby (1995); Sexton and Bowman-Upton (1990)
process	Brazeal and Herbert (1999); Burgelman (1983a, 1983b, 1984b); Gartner (1990); Hornsby <i>et al.</i> (1993); Minniti and Bygrave (1999); Morris and Lewis (1995); Clauss, Spieth & Kesting, (2018)
type of organization	Birkinshaw (1999); Burge; Iman (1984a); Miller (1983); Miller and Friesen (1982); Moon (1999); Schuler (1986)
Outcomes	Antoncic and Hisrich (2004); Covin and Covin (1990); Kuratko <i>et al.</i> (2001); Lumpkin and Dess (1996); Murphy <i>et al.</i> (1996); Vozikis <i>et al.</i> (1999); Westhead <i>et al.</i> (2005); Wiklund and Shepherd (2005); Wincent (2005); Zahra (1993)

Table 2 - Names and definitions of constructs

Construct Name	Construct Definition
Entrepreneurship	Describes the extent to which the firm promotes policies and activities leading to the recognition and the exploitation of opportunities in the marketplace.
Knowledge Management	The combined effort arising from capture, creation and dissemination of knowledge related to products, customers and organizational management activities.
Strategic Decision Flexibility	The extent to which the company promotes policies and implement activities leading to a flexible action in the various levels of the company in a timely manner that anticipate and resolve problems as they arise (e.g. formal steps to be taken in routine or non-routine activities, independence of employees to meet and propose solutions).
Human Resources Capabilities	Describes the extent to which the firm promotes the employees' attitudes, abilities and commitment that are necessary on supporting dynamic decision making and achieve the business outcomes.
Performance	The key performance drivers related to the business results (e.g. revenue growth, market share, customer satisfaction).

Figure 1. Complex effect of dynamic capabilities foundations on performance

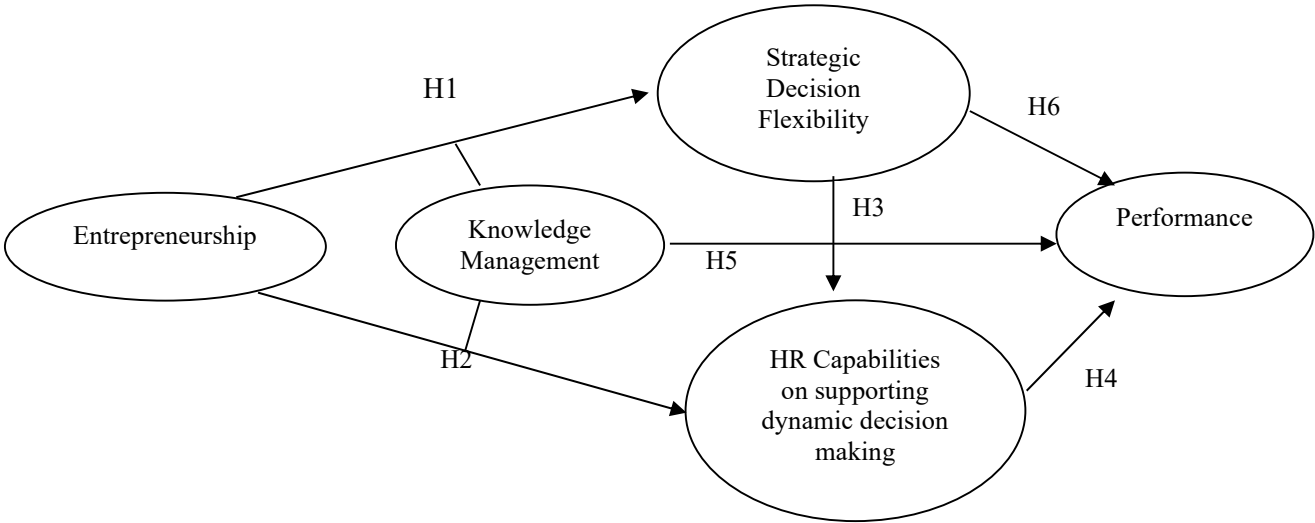


Table 3 - **Internal consistency**

Variable	Alpha
Entrepreneurship	0.88
Knowledge Management	0.94
Strategic Decision Flexibility	0.89
HR Capabilities	0.93
Performance	0.94

Figure 1 - Standardized Performance path model

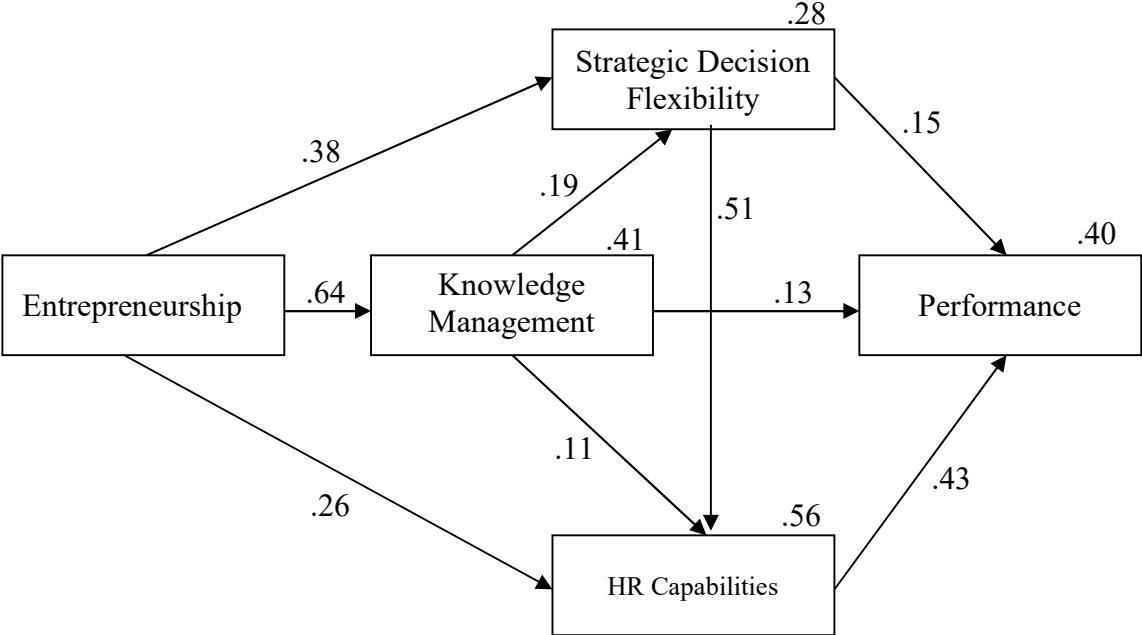


Table 4 - **Correlation Matrix**

	<i>SDF</i>	<i>HRC</i>	<i>KM</i>	<i>PFM</i>
Entrepreneurship	.506**	.589**	.640**	.439**
Strategic Decision Flexibility		.693**	.436**	.513**
Human Resources Capabilities			.500**	.607**
Knowledge Management				.417**

** $p < .01$

Table 5 – Standardized Effects

	KM			SDF			HRC			Performance (PFM)		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
Entrepreneurship	0,640	0,000	0,640	0,384	0,122	0,506	0,258	0,331	0,589	0,000	0,419	0,419
Knowledge Management (KM)	0,000	0,000	0,000	0,190	0,000	0,190	0,111	0,098	0,208	0,132	0,120	0,252
Strategic Decision Flexibility (SDF)	0,000	0,000	0,000	0	0,000	0,000	0,515	0,000	0,515	0,155	0,223	0,378
Human Resources Capabilities (HRC)	0,000	0,000	0,000	0	0,000	0,000	0,000	0,000	0,000	0,433	0,000	0,433