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The role of the alliance management capability

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This paper proposes that the frequently established association between alliances and performance can be further explained by the alliance management capability. It unfolds some relationships that are encapsulated in the simple link between the alliance-related construct and the performance measures. The research hypothesis formed a structural model and the results confirmed that the proposed moderating role for the alliance management capability is significant and that alliances are effectively used for growing and for innovating. The main outcomes are: (a) a discussion and a test of ‘what is’ the alliance management capability; (b) a better understanding of the reasons why alliances enhance performance, namely by leveraging growth and innovation.

Keywords: dynamic capabilities view; strategic alliances; performance; alliance management capability

Introduction

In the past, strategic alliances have been able to explain competitive performance differentials. This research builds on the hypothesis that this explanation can be enhanced by considering the role of dynamic capabilities (DCs). Namely, it tests if the ‘alliance management capability’ has a significant role at that relationship. This research proceeds by assembling a nomological network, which unfolds some relationships that are encapsulated in the simple (direct) link between an alliance-related construct and the performance construct(s).

Strategic alliances as antecedents of performance

Literature has largely established a relationship between alliances and performance differentials observed between firms – Table 1 makes a summary of some applications. Despite the widespread belief that alliances are a potentially positive factor, there are significant research opportunities in explaining ‘how’ and ‘why’ these results occur with so varied intensities. In fact, regardless of the reasons leading to the formation of alliances, the size and scale of the impacts of alliances in businesses are very different, i.e. not always the actual outcomes are positive on companies (Anand & Khanna, 2000; Duysters & Heimeriks, 2002; Gonçalves, Palma-dos-Reis, & Duque, 2000; Gulati, 1998; McGee, Dowling, & Megginson, 1995; Tehrani, 2003). This is probably the result of complex phenomena whose current understanding can be enhanced.

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Table 1. Empirical applications on strategic alliances.

Authors	Level of analysis	Theoretical lenses	Data/sample
Sampson (2004)	Diad	Transaction costs versus RBV	232 R&D alliances
Arino (2003)	Diad	Performance measures	91 multi-sector agreements
Mellewigt (2003)	Diad	Transaction costs and RBV	83 German telecoms
Lane and Lubatkin (1998)	Diad	Organizational learning	69 alliances in pharma/ biochemical
Kale and Singh (1999)	Diad	KBV	140 USA companies
Sarkar et al. (2001)	Diad	Structure of relationship	561 international construction firms
Gonçalves and Faustino (1996)	Firm	Competitive strategy	10 Portuguese bank groups
Takeishi (2001)	Firm	KBV/DCV	45 suppliers of auto industry
Doz (1996)	Firm	Organizational learning	Two cases of triple alliances
Szulanski (1996)	Firm	KBV	271 cases in <i>best-practice transfer</i>
Tehrani (2003)	Firm	Competitive strategy	303 USA and 90 French in <i>high tech</i>
Singh and Mitchell (2001)	Firm	Competitive Dynamics	667 agreements
Benfratello and Sembenelli (2002)	Firm	Productivity analysis	411 firms
Swaminathan and Moorman (2003)	Firm	RBV and network analysis	138 <i>software</i> companies
Simonin (1997)	Firm	Org. learning and RBV	151 firms
Mcgee et al. (1995)	Firm	Transaction costs	210 multi-sector firms
Hagedoorn and Shakenraad (1994)	Firm	Contingency analysis	346 multi-sector firms (USA)
Quintana Garcia and Benavides-Velasco (2004)	Firm	Network analysis	73 biotechs and 6-years panel data
Zollo, Reuer and Singh (2002)	Firm	Evolutionary economics	145 biotech companies
Odagiri (2003)	Firm	TCE and DCV	10 Top pharma (japan)
Ahuja (2000)	Firm	Network structures	268 <i>joint-ventures</i>
Lee, Lee and Pennings (2001)	Firm	Networks and RBV	137 <i>start-ups</i> in high tech
Tsai (2001)	Network	Organizational learning	60 in petrochemical/food industries
Ford, Gadde, Hakansson and Snehota (2002)	Network	IMP model	IKEA
Brito (2001)	Network	Institutional theory	Port Wine supply chain
Stuart (1998)	Network	Organizational ecology	150 firms and 6-year panel

However, the reasons for firms to form alliances are the benefits they hope to gain through them, so this stream of research is equally interesting for managers and academics.

Table 1 evidences that the subject of strategic alliances is analysed by different types of research. In fact, for example, the pieces of this research portfolio can refer to different objects: dyads, firms or networks. Consequentially, the companies involved in alliances can be constrained by specific variables in any of the three levels presented. In terms of relationships (dyads), the partners have to find a suitable degree of compatibility between them. At the company level, to maximise gains from an alliance, we need to align the capabilities of the companies with the characteristics, context and the objectives of the alliance. Finally, alliancing has a growing intensity – leading to the appearance of complex networks – and thus, the network as a subject or as a context of analysis is also a promising perspective into the phenomenon of alliances.

Gnyawali and Madhavan (2001) used these three levels in a model of analysis of competitive dynamics, concerning the influence of network providers on the innovation of a focal firm. Unfortunately, this is a conceptual work, without the empirical testing of hypotheses. Duysters, Heimeriks and Jurriëns (2003) tried to associate each of these levels of analysis with a single theoretical framework, without empirically validate their propositions.

Moreover, in spite of this large number of research outcomes, there are relatively few empirical studies assessing the impact of membership in alliances, in terms of overall business performance (e.g. George, Zahra, Wheatley, & Khan, 2001; Schakenraad & Hagedoorn, 1994; Shan, Walker, & Kogut, 1994; Stuart, 2000).

As far as the theoretical perspectives are concerned, there are also several and varied contributions. They prove themselves to be valuable insights into the role of alliances for firms. Table 1 also corroborates this idea, showing the relationship between levels of analysis and theoretical frameworks.

As a result, this research intends to work at this open question about the role of alliances in order to contribute to the extension of the present ability to understand this phenomenon.

DCs and strategic alliances: review and synthesis

The role of DCs

DCs are especially promising for analysis in management (Eisenhardt & Martin, 2000; Teece, Pisano, & Schuen, 1997; Winter, 2003). The Dynamic Capabilities View (DCV) focuses on the ability of firms to deploy their set of resources and capabilities, as a means to explain their strategic options, their outcomes and, ultimately, their performance levels (Eisenhardt & Martin, 2000). The explanation for the reason why the DCV has a 'Schumpeterian' (Jacobson, 1992; Roberts & Eisenhardt, 2003) appearance, it is because competitive advantages are said to depend on the success of these innovative reconfigurations of firms' resources and capabilities. However, some controversy surrounds this concept. First, while some scholars posit these capabilities as being key to attain and sustain competitive advantages (Teece et al., 1997), others regard them as 'another possibility in the strategist's tool kit' (Winter, 2003, p. 994), thus rendering them a non-necessary condition for those advantages, at least in certain contexts. What is more, the seminal literature (Eisenhardt & Martin, 2000; Teece et al., 1997) specifies that the actual role of DCs is the reconfiguration of the firms' bases of resources and first-order capabilities. This means that DCs require a set of resources to be in place, the reconfiguration of which will support and thus generate positive results for the firm.

Although this may seem obvious, there are many examples in which DCs have been directly attached to performance outcomes, or have been regarded as a self-sufficient response to the challenge of explaining sustained competitive advantage (e.g. George et al., 2001; Tsai, 2001). Possibly, they could link to resources' reconfiguration, or to intermediate outcomes such as innovation, but certainly not to ultimate outcomes.

Secondly, in some contexts, DCs are not a necessary condition for success, because they can be substituted (Winter, 2003). Nevertheless, DCs are enablers of the firms' activity, even if they are not always called for. Similarly, they are not a sufficient condition since the capabilities alone cannot 'add' performance. By definition (Teece et al., 1997), DCs are used to reconfigure the base of resources and first-order capabilities and it is the result of this reconfiguration that may explain performance differentials. In conclusion, if

DCs are not a *sine qua non*, nor a sufficient condition for higher performance, why are they analysed? From which perspective are they a subject worthy of analysis?

As a result, this paper enters into this debate involving DCs by offering an attempt to clarify what the role of DCs can be. In particular, it conceives a particular role for the alliance management capability, which does not require it having to explain performance directly, but rather to moderate impacts over those outcomes.

The alliance management capability

In general, strategic alliances can create advantages for companies that integrate them, due to two factors (Ireland, Hitt, & Vaidyanath, 2002). Firstly, these benefits result from the combination of the resources offered by partners. These resources can have different natures, so that both those advantages may result from complementarity – a situation most often mentioned in literature – as the accumulation of identical or substitutable resources (Das & Teng, 2000). Secondly, competitive advantage can come from the companies' ability to assemble and to manage their portfolio of alliances (George et al., 2001) and mobilization of resources and capabilities through it (Makadok, 2001). Therefore, one can conceive the alliance management capability as a process of building and sustaining competitive advantages associated with belonging to an evolving network of partnerships. Moreover, being based on a specific set of relationships, with structural, relational and cognitive components (Nahapiet & Ghoshal, 1998), this capacity will not be transferable and therefore can only be built by companies. This may also explain the results because of competitive performance, to be specific to the company, it is rare and difficult to imitate or substitute (Dyer & Singh, 1998), and also explains the strategic choices of companies (Gimeno, 2004).

Thus, in order to set up the alliance management capability, companies need to coordinate resources, processes and routines related to alliances, through a set of organizational mechanisms, backed by experience and knowledge (Duysters & Heimeriks, 2002). This ability materialises into a system of mechanisms that determine the success of each individual alliance and supporting the management of all (Makadok, 2001).

The literature has made some proposals about the nature of these mechanisms and on the sub-capabilities that can deploy the capabilities of alliance management. According to Kale, Singh and Perlmutter (2000), the management of alliances involves: the ability to transmit or develop knowledge, preventing opportunistic appropriation by partners, the ability to identify and select partners, the ability to restructure existing alliances or a portfolio. Dyer and Nobeoka (2000), following the logic of the relational perspective proposed by Dyer and Singh (1998), refer to the ability to create advantages over the products of alliances, as an enhancer element of the role of strategic partnerships on performance. Draulans, de Man and Volberda (1999) proposed a hierarchy of attributes that alliance management would be associated with. This typology provides a continuum of capacity development for management of strategic alliances with four stages of development which, in turn, are built on incremental logic in which the stage immediately prior to adding more features on that list until, at the final stage, the ability of alliance management will be fully developed because the companies dominate all proposed mechanisms.

Duysters and Heimeriks (2002) characterised the ability of alliance management at the enterprise level, using four categories of mechanisms: roles (positions in the company related to the management of alliances whose interest is the concentration and integration of experience in alliances, e.g. a manager of strategic alliances), tools (structural entities

created to facilitate the integration of specific knowledge alliances in order to improve decision making, e.g. a selection programme partners), management processes (facilitators of daily work, which induce more effectiveness and efficiency into joint work, e.g. performance metrics and incentive systems) and external entities (elements that supplement the shortcomings of the companies regarding the management of alliances, e.g. consultants). There were no further empirical applications of confirmatory nature using this checklist. However, better descriptions of behaviours and practices are urged (Duysters & Heimeriks, 2002), so that academics and managers can understand the role of the management capacity of strategic alliances.

It should be noted that the capacity to manage alliances, which is 'constructed' within each firm is in this sense, company-specific – and therefore should be especially interesting to study it from the perspective of DCs (Eisenhardt & Martin, 2000). Moreover, these idiosyncrasies may explain the impact of alliances on company performance, because that accumulation, and the intersection with other capabilities, requires us to take as its object the entire portfolio of alliances (Anand & Khanna, 2000; Duysters & Heimeriks, 2002; Kale, et al., 2000; Makadok, 2001).

The literature (e.g. Anand & Khanna, 2000; Dyer & Singh, 1998; Duysters & Heimeriks, 2002; George et al., 2001; Gulati, 1998; Makadok, 2001) around the concept of alliance management capability shows that there is potential for theoretical development relating to: (a) explaining the observed performance differences based on the competitive advantage built or sustained by a network; (b) improving knowledge about the relationship between this capability and other business contingencies, and (c) developing research projects that investigate the empirical evidence and the key dimensions of this phenomenon.

Alliance management capability as a DC

In spite of the literature having acknowledged the potential of this concept, little empirical or theoretical work has been proposed since the seminal contributions of Dyer and Singh (1998), Draulans et al. (1999, 2003) or Lambe, Spekman and Hunt (2002). These studies emphasised that having special skills in alliance management, i.e. mechanisms and resources that apply effectively pertinent knowledge, may yield additional benefits to the firm.

DCs refer to the integration of functional capabilities and resources, through a knowledge-rich process (Teece et al., 1997). Alliance management capability was defined as a process that involves co-ordinating resources (including experience and knowledge, as in, Hsueh, Neng-Pai, & Hou-Chao, 2010; Scott & Laws, 2010) and organizational routines (Baggio & Cooper, 2010; George et al., 2001; Henderson & Cockburn, 1994; Ireland et al., 2002; Makadok, 2001; Nahapiet & Ghoshal, 1998; Winter, 2003; Zehrer & Raich, 2010) in order to: develop an alliance portfolio, particularly to anticipate problems and explore new opportunities; to exploit each alliance fully; and to mobilise resources and seek synergies in the current portfolio. So, alliance management capability is a DC, because it is of a higher order (Collis, 1994), aimed at integrating resources and functional capabilities, in order to adapt firms to external dynamics.

Research contribution and hypotheses

Research contribution

Strategic alliances impacts are still an important subject of debate. The departure point for this investigation was the claim that there is a direct link between making alliances and

having a superior performance (Ahuja, 2000; Bae & Gargiulo, 2001; Sarkar, Echambadi, Cavusgil, & Aulakh, 2001; Tsai & Ghoshal, 1998). This research attempts to enhance this perspective by proposing a multilayered, more complex and innovative view over this relationship between alliances and competitive performance.

The present research innovates at explaining the relationship between alliances and competitive performance through a DCV lens. The research question is: does the alliance management capability moderate the relationship between alliances and performance?

According to the proposed framework, (a) competitive performance depends on strategic alliances, but (b) the size of the impact of alliances depends on the role of knowledge-rich capabilities that are associated with alliancing (Arroyo-Barrigüete, Ernst, López-Sánchez, & Orero-Giménez, 2010; Brás, Costa, & Buhalis, 2010; Cockburn & Henderson, 1998; Duysters & Heimeriks, 2002; George, Zahra, Wheatley, & Khan, 2001). So, the role of the alliance management capability is that of a moderator.

Hypotheses

The literature agrees that the ability to integrate resources in an innovative manner may be a key source of value to firms (Hoskisson, Hitt, Wan, & Yiu, 1999). In order to innovate, firms need to offer new products or to raise new business processes, by integrating resources and capabilities that are either new to the firm or previously existent (Kogut & Zander, 1992). Thus, such integration can depend on resources that came from inside the organization, from outside, or both (Grant, 1996). The firms' external network, in particular, the formalised relationships (the structural relationships, cf. Nahapiet & Ghoshal, 1998), can be a vehicle for the identification (or transmission, or acquisition) of these resources. Therefore, a research hypothesis is presented, proposing a relationship between the portfolio of alliances – as a proxy for the degree of abundance of external resources – and the performance outcomes (Bae & Gargiulo, 2001; Sarkar et al., 2001; Tsai & Ghoshal, 1998):

H1: The firms' performance measures are, causally and positively, related to the structural dimension of the firms' portfolio of alliances.

Hunt and Morgan (1997) presented an integrated model between competing explanations for competitive performance. Accordingly, value generating processes, and ultimately, performance outcomes, depend on innovation. In our research, the degree of innovation is proxied by the degree of the reconfiguration of the portfolio of products. It is hoped that there has been a reconfiguration of the firms' portfolio of products – reflecting a significant evolution of their base of resources and capabilities.

At this stage, whereas hypothesis are still being developed, an industry-based focus will be proposed. According to King and Zeithaml (2001), the way that capabilities are operationalised is industry-specific. The pharmaceutical industry can be a context of interest for this seminal research since firms operate in a turbulent environment, which is rich in alliances, and knowledge is a key asset for competition (Henderson & Cockburn, 1994). As a result, DCs may be of use here.

With regard to the pharmaceutical industry, it is expected that either generic drugs or innovative drugs have been important for the reconfiguration of the firms' basis of resources and capabilities. Thus, the results of such a reconfiguration – the degree of incorporation of either generic brands or innovative brands – in its portfolio can explain performance differences. It is also expected that both types of drugs were important for competition, since they are not hypothesised to be perfect substitutes. Different

strategic decisions can, in fact, lead to similar performance outcomes, as there is probably no best way to compete (Peteraf & Bergen, 2003).

H2: The ability to carry out an effective reconfiguration of the portfolio of products adds to performance outcomes.

It is proposed that there is a relationship between the reconfiguration of the products portfolio and the alliance portfolio of firms. This hypothesis derives from the notion that innovation is a desired outcome for the alliances (Huang, Song, & Zhang, 2010; Pechlaner & Bachinger, 2010; Simonet, 2002).

H3: The number of alliances prevailing during a certain time period explains, to some degree, the reconfiguration of the portfolio of products that has occurred at that same period.

Competitive performance is a complex concept. Hunt (2002, p. 29) showed that it is probably the result of a continuum of choices by firms' interacting in order to produce a set of market positions (both in the productive factors market and the products markets). Moreover, firms compete for comparative and competitive advantages, looking forward to one result: superior financial performance (in the long-term, at least). Therefore, some of the outcomes that researchers usually measure are intermediate results with regard to the financial perspective of performance (Hunt, 2002; Hunt & Morgan, 1997; Ray, Barney, & Muhanna, 2004). So, the following hypothesis, regarding the relationship between performance indicators is proposed:

H4: Financial performance is explained by the firms' relative position in the products market, which is a positive causal link.

This research focuses on a higher order capability – knowledge-based co-ordinating mechanisms – whose presence and intensity are possibly important for the decision making process and policies regarding alliances. Those processes are not specific to today's alliances, but rather they help firms to evaluate their current portfolio and improve the assessment of opportunities (Takeishi, 2001).

The ability to execute proficiently the alliance management capability enables firms to better recognise opportunities and threats and to explore the alliances into which they enter (Kale & Singh, 1999, p. 4). Therefore, this capability is hypothesised to act as a contingency upon the potential benefits of these relationships.

Following the previous discussion of DCs, these are neither a necessary, nor an adequate condition for an improved performance. However, they can play a positive and a significant role when acting as moderators of that claimed relationship between alliances and competitive performance. In fact, the firms' base of resources and capabilities is likely to adapt to external contingencies, revealing that firms are trying to select relevant information from the market and are integrating this into their operations and strategic positioning (Fuller-Love, 2009; Stoelhorst & Raaij, 2004; Wakkee, Elfring, & Monaghan, 2010; Warren, Patton, & Bream, 2009).

Finally, this capability can be derived from accumulated experience with alliances, from managers' having the appropriate type of expertise (e.g. McGee et al., 1995) or from the firm having a strategic vision that reinforces the role of alliances as a means to create wealth and business opportunities. According to Lambe et al. (2002), these elements can combine together into forging that higher order capability.

H5: The positive effects of an alliance portfolio on performance measures are moderated by the firm's alliance management capability.

Figure 1 depicts a model that highlights the proposed role for alliance management capability: it moderates the impact of alliances on performance dimensions.

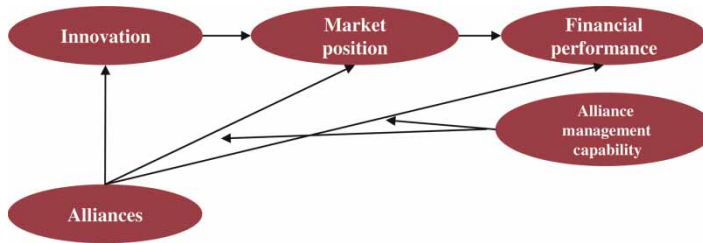


Figure 1. The proposed role for alliance management capability.

On causality

Following Mitchell (1993), the analysis sought here is of a structural nature, as opposed an analysis of a ‘black box’. These latter relate to combining inputs and outputs without specifying the type of generative mechanisms that combines those inputs to produce those results. In structural analysis, the objects are the underlying mechanisms, i.e. the theories/concepts that are related genetically, the observed phenomena. The role of data and quantitative techniques of such analysis tends to differ: in the first issue is concerned predict effects, as effectively as possible in the second case, the emphasis of research is aimed to test the hypotheses/theories of relationship between phenomena and quantitative data are used to determine the coefficients (e.g. causality or correlation). Note that these roles are not mutually exclusive, and in fact, correlation (statistical association) are necessary for establishing causation. But there are other conditions: ‘causal effects in observational studies can only be substantiated from a combination of data and untested, theoretical assumptions; not from the data alone’ (Pearl, 2010, p. 2). Therefore, we will look for ensuring that the measurement periods of explanatory variables precede those of the explained variables. Additionally, there must be a non-spurious relationship, or a nomological relationship between constructs. Our model and estimation technique should be more than ‘just nonexperimental data’ (Pearl, 2009, p. 370). In structural equation modelling and in path analysis, the input consists of two components: (a) data, (b) causal assumptions reflected in the proposed models. By testing these assumptions, we can infer about the outcomes of hypothetical randomised experiments and state if causality is plausible. Our research programme should explain how, from the perspective of (the science of) management those relationships are pertinent research hypotheses.

However, structural equation modelling or path analysis is frequently used for forecasting, but they also serve explanatory purposes. Snow and Thomas (1994) described three types of research: description, explanation or prediction. This paper has an explanatory purpose and proceeds through the test of a given set of assumptions. These assumptions underpin a proposed explanation of the relationship believed to exist between alliances and performance. This relationship has deeper explanations than mere coincidence between the membership of alliances and verification of performance differentials between firms. According to the theoretical perspective adopted, the explanation lies in the organization, dynamics and history of each company. The analysis to verify these hypotheses with empirical data allow some inferences about the explanatory potential of this model and, by extension, the DCs perspective, where it originated (in order to undercover these underlying causes, structural equation modelling or path analysis will be an adequate techniques) (Pearl, 2010).

The main research question inquires about the generative mechanisms that contribute to explain the relationship between alliances and competitive performance. Indeed, it was

shown that the simple relationship between alliances and performance, as is often put, may misrepresent the causality chain of the impact of alliances on the phenomenon of competitive performance.

Methodology

Analytical technique

The purpose of this research is to test a theory. A quantitative approach was planned for the empirical testing, based on a survey – aimed at a specific industry (the Portuguese pharmaceutical industry), in order to control for contextual forces – and on secondary sources. Further details on the measures can be obtained from the corresponding author.

The model that derives from those hypotheses is clearly a structural model, where the constructs are related to their generative mechanisms. Chin and Newststed (1999), Gefen, Straub and Boudreau (2000) and Haenlein and Kaplan (2004) argued that partial least squares (PLS) should be able to analyse empirical problems even with small samples, or non-normal distributions of data. PLS is also applicable whenever there is a rather complex model to be estimated and when there are formative constructs. Therefore, PLS is a suitable technique for performing a structural equation analysis with the proposed model and the expected type of data.

Data collection

With the contribution of Infarmed (the national authority for regulatory issues with regard to pharmaceuticals), 140 firms were identified as forming this industry. A survey was sent to all of these firms. Forty-five firms (32%) returned valid, fully completed questionnaires. However, these firms account for 78% of the 2004 sales in the Portuguese drugs market. Furthermore, this sample represents 58% of all products. Finally, these firms provide 86% of all hospital sales. Thus, in spite of the apparently modest 32% response rate, the sample covers a large share of the drug market.

Measures

Table 2 summarises the measures that will implement the theoretical constructs.

The research findings

The evaluation of PLS estimations procedure encompasses two steps: the analysis of the measurement model and the evaluation of the structural model. Finally, a deeper analysis on the results and of the claim of a moderating role for alliance management capability will be performed.

Analysis of the measurement model

The measurement model will be evaluated in respect of composite, reflexive variables, according to the measures' reliability (both individual and composite) and validity (discriminant and convergent). Formative constructs, either first order or second order, will be evaluated according to their individual statistical significance and their ability to predict the endogenous variables of the model. All individual measures are all individually reliable, because their loadings over the latent constructs are all above the 0.70 threshold (Gefen et al., 2000). All the latent constructs are reliable according to the measure of

Table 2. Measures.

Dimension	Latent variables	Measure type	Indicators	Data
Financial performance	Financial performance (PRF)	Ratio measure	Profitability: net profit divided by sales volume in year 2004	Coface
Market position	Market share (MSH)	Ratio measure	Firms' sales in retail drug markets divided by total sales of all firms	IMS
Alliances	Growth (GRW)	Ratio measure	Sales in 2004 minus sales in 2000	IMS
	Alliance portfolio (ALI)	Latent formative construct (index)	Built from counting alliances of 4 categories: R&D alliances settled prior to 2001, and after; marketing alliances settled prior to 2001, and after	Survey
Alliance management capability	Alliance management capability	Second-order latent formative construct (first-order components, are explained below)	Built from the scores of 3 components, identified by Lambe et al. (2002): experience, managers' skills and proactivity	Survey
	Experience with previous alliances	Latent reflexive construct, derived from perceptual measures	Three indicators measured using a Likert scale, ranging between 1 and 7	Survey
	Managers' skills at managing alliances	Latent reflexive construct, derived from perceptual measures	Three indicators measured using a Likert scale, ranging between 1 and 7	Survey
	Proactivity towards new alliances	Latent reflexive construct, derived from perceptual measures	Three indicators measured using a Likert scale, ranging between 1 and 7	Survey
Innovation	Portfolio reconfiguration (with innovative drugs) between 2001 and 2004 (RCI)	Latent reflexive construct	Two indicators: increased weight of innovative drugs in firms' portfolio; count of new innovative products	IMS; FDA
	Portfolio reconfiguration (with generic drugs) between 2001 and 2004 (RCG)	Latent reflexive construct	Two indicators: increased weight of generic drugs in firms' portfolio; count of new generic products	IMS; Infarmed

composite reliability by Werts, Linn, and Jöreskog (1974). It was expected to find scores superior to 0.70 and the lowest score is 0.90. In addition, in order to evaluate convergent validity, all constructs should signal at least 0.50 in the average variance extracted (AVE) measure, and the least recorded value is 0.84. This means that among the indicators comprising the latent constructs, there is a high degree of common variance. AVE can also be used to evaluate the degree of discriminant validity among the constructs. Accordingly, all the constructs provide an adequate discriminant validity: the values of the squared AVE of each construct are compared with the values of the cross-correlations among constructs. This analysis affirms that the constructs are satisfactorily discriminated against each other. As for the formative constructs, no AVE measure can be calculated for them and accordingly, this type of analysis does not apply neither to them (Gefen et al., 2000), nor to single-item latent variables. Again, further details on these results are available from the corresponding author. Since all measures are valid and reliable, they can be used and interpreted within the context of the present research objectives.

Analysis of the structural model

This section refers to the relationships between constructs that are postulated by *H1–H5*. Table 3 allows us to analyse the proposed model. Figure 2 depicts the most significant estimated paths relating to those latent constructs.

All the research hypotheses were validated except one: the relationship between alliances and profitability. Therefore, no moderating role for this link was proposed, nor tested. Only once was it necessary to apply the most indulgent level of confidence (90%, thus $p < 0.10$), the most frequent confidence level of which is 99%.

With reference to the role of the alliance management capability, ‘the moderator hypothesis is supported if the interaction is significant’ (Baron & Kenny, 1986, p. 1174). This condition is verified for the relationship between alliances and growth ($p < 0.01$) and market share ($p < 0.025$). Thus, the symbol ‘n/a’ next to the path linking the capability to the outcomes, signifies that it is not theoretically meaningful (according to the proposed definition of DCs), nor statistically relevant for testing this moderation hypothesis (Baron & Kenny, 1986, p. 1174; Chin, Marcolin, & Newsted, 2003). To sum up, the moderation hypothesis is proved to be true according to the statistical *t*-test.

Table 3. Results of the structural model estimation.

Hypothesis	Predicted effect	Estimated path	T-statistic	p-Value	Supports research hypothesis?
H1: ALI → MSH	+	0.50	3.26	<0.01	Yes
H1: ALI → GRW	+	0.54	4.06	<0.01	Yes
H1: ALI → PRF	+	0.14	0.39	n/a	No
H2: RCI → MSH	+	0.24	1.81	<0.05	Yes
H2: RCG → GRW	+	0.34	2.57	<0.01	Yes
H2: RCG → PRF	+	0.59	1.86	<0.05	Yes
H3: ALI → RCI	+	0.63	7.34	<0.01	Yes
H3: ALI → RCG	+	-0.20	0.78	n/a	No
H4: MSH → PRF	+	0.33	2.48	<0.01	Yes
H4: GRW → PRF	+	0.30	0.98	n/a	No
H5: MOD → MSH	+	0.21	2.30	<0.03	Yes
H5: MOD → GRW	+	0.27	3.16	<0.01	Yes

Note: n/a: p-Value superior to commonly accepted values.

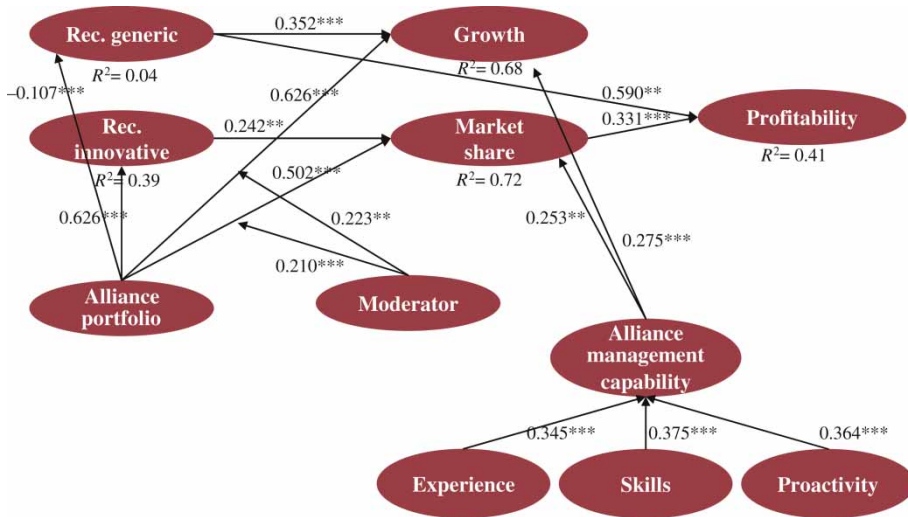


Figure 2. Estimated model.

* $p < 0.10$.

** $p < 0.05$.

*** $p < 0.01$.

Discussion and further exploitation of results

The estimation confirmed that the reconfiguration of the resource base (or innovation, proxied here by the portfolio of products) is capable of explaining two of the outcomes' dimensions identified by Hunt and Morgan (1997): position in markets (market share and sales growth) and financial performance (profitability).

The reconfiguration of the portfolio of products distinguishes between two important categories of products: innovative products and generic drugs. Each of these categories explains different performance outcomes: generic drugs are able to explain growth and profitability, while a successful reconfiguration based on innovative drugs relates to larger firms (or leads to higher market shares). Moreover, alliances (the index that represents the alliancing activity of firms) explain the reconfiguration of products portfolios, if they are based on innovative drugs. In fact, alliances do not seem to be of importance for introducing generic drugs. Finally, the proposed role of the alliance management capability is proved to be true, within the context of the present analysis. For the moment, analytical generalization has been achieved, since the theoretical framework has been proved to be able to explain a certain reality (Yin, 1994, p. 31). Further research, attempting to replicate this empirical application, either for the pharmaceutical industry, or for other industrial settings, will allow for statistical generalization.

The analysis of the moderating role of alliance management capability imposes a further test (Chin et al., 2003). Table 4 shows the results of this test: the initial R^2 ; its new score; and the results (p -value) for the f^2 -statistic that are obtained from adding the interaction term. Again, the hypothesis that the interaction term is significant (i.e. that there is moderation) is validated, at confidence levels of 95% and 99%.

Finally, the overall explanatory ability of the model can be tested by means of a similar procedure. PLS does not generate global measures for the quality of the model, like the ones provided by covariance-based structural equation modelling. So, the analysis of the estimated model will be based on R^2 scores. The first column of Table 5 shows the

Table 4. f^2 -Test for moderation.

	R^2		f^2 -statistic	p -Value
	Without moderator	With moderator		
GRW	0.62	0.68	3.80	<0.05
MSH	0.63	0.72	6.41	<0.01

Table 5. Test for explained variance.

	R^2		f^2 -statistic	p -Value
	Alliance as single explanation	Full model		
MSH	0.58	0.72	4.82	<0.01
PRF	0.02	0.41	13.30	<0.01
GRW	0.44	0.68	7.34	<0.01

R^2 scores for a simple model, such as the one depicted in Figure 1, in which the dependent variables (performance measures) are explained solely by the alliance portfolio construct. Next, the second column shows the scores for the full model, as estimated before. Again, the f^2 -statistic test shows that there has been a significant improvement in explaining the outcomes after a larger, layered explanation has been proposed for the relationship between alliances and performance.

The findings of this research have significant managerial implications for companies. It was shown that alliances can be associated with higher levels of performance. While this statement merely corroborates the results of some previous literature, this research went further. In addition to showing that there is usually a possibility of impact, it showed that there are conditions for this impact to be more noticeable, or to be significant at all.

It is important to realise the performance dimensions of the companies that alliances can impact at (results, market share, innovation, etc.), in order to better support the economic calculation of its potential benefits and risks. In this case, alliances have implications for the positioning of companies in relation to his involvement with innovative products.

The data analysis also allowed us to conclude that there are alliances with very different impacts. That is, there are alliances on certain products that have been very obvious, while other alliances have not got very significant results. Is it a matter for further research to verify that the motivations and mechanisms that govern the formation of these alliances with lesser impact. The business alliances of recent years seem to have been as important as those that were started earlier, to reconfigure their portfolios, or to explain differences in performance.

Furthermore, it is clear that the processes by which companies access to certain partners and alliances are built, and are made of the sedimentation of experiences, learning and reputation building. Therefore, the companies should deliberately aim at building this an alliance management capability, because this DC explains the differentiated results of alliances on firms over time.

Regarding alliances only in its direct relationship with levels of performance may underestimate their actual impact. There is a hidden value in alliances. This investigation showed that they support the reconfiguration of portfolios and they were associated with important capabilities that support the process of changing companies. Therefore, alliances are generating internal externalities that managers should consider, because even

if an alliance does not have clear impacts on some performance indicators, it may still be important at other levels such as innovation. The learning derived from the accumulation of experience is a component of the management capacity of alliances, but others have been identified: the individual skills of the managers of alliances and the proactivity in seeking and analysing new partnerships.

Conclusions and directions for future research

In conclusion, this research succeeded at offering its desired contributions. Firstly, it departed from a research question, which stressed that the alliance management capability could add up to the explanation of the relationship between alliances and competitive performance. Accordingly, it presented an innovative view on the issue of how alliances relate to performance and evidenced the importance of the alliance management capability.

Secondly, the research underlined the explanatory ability of the DCV. In fact, it discussed the definition of DCs and it concluded that being a non-necessary condition and a non-sufficient condition for enhanced performance, DCs were, most probably, a moderator of certain relationships, i.e. whenever they are present, it could supplement a relationship that otherwise would still exist even though probably weaker.

Thirdly, this research called for an empirical application of certain constructs (namely, the alliance management capability), thus contributing for its sedimentation and for its nomological validation.

This research was the starting point of a process that does not end this paper. Along this route, in addition to providing answers to research questions, it was possible to accumulate a set of future research questions. Firstly, there is the need for further investigation on the specific tools and practices that operationalise the alliance management capability. This opportunity follows the research literature, including Foss and Ishikawa (2006), which advocates the advancement of research towards the 'how' the new combinations of resources and capabilities are discovered. This will be better handled by an exploratory study given the lack of systematic studies. Very little literature was published on this subject and still directed at multinational companies. Therefore, regarding, for example, smaller companies we do not know which are the most important variables in the configuration of that ability, for managers to intervene or to researchers to conduct field studies. Secondly, how to overcome the problem of endogeneity of the relationships between the constructs? It is a difficult subject to investigate from the quantitative point of view without recourse to extensive databases. The nature of phenomena (e.g. alliances and their management capacity) suggests there may be feedback effects over time (to the extent that the portfolio is being built and its management capacity is being calculated) that are relevant to the initial question. The innovation of the DCV is due to the idea that the heterogeneity of business performance may be due to both the characteristics of its resource bases and the way it is combined. It was shown that the coordination of resources can be enhanced by belonging to strategic alliances, as there is a learning process implicit in these relationships. The DCs perspective advocates that the experience thus accumulated can lead to the development of new features and capabilities. So, further investigation may focus on the role of an individual target and assess capabilities, as in a longitudinal study to study in how businesses develop relations (bidirectional) and how this contributes to the evolution of this capability. Finally, how to triangulate these findings? The question that arises here is whether the conclusions reached are relatively sensitive to the methodology used, in whole or on some particular aspects. Replication studies – triangulating contexts, methods and even the researchers – are essential to validate a

theory (Mir & Watson, 2001; Tsang & Kwan, 1999). The present study proves certain hypothesis, articulated together in a model of relationships, which hopefully will be tested in novel contexts in future research.

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