

Alliance Portfolio Management: A Model Based on Dynamic Capabilities

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Abstract Alliances established by firms are increasing since three decades and these firms have to manage an important alliance portfolio. Researches have demonstrated that alliances contribute to the improvement of the firm's performance via savings in coordination costs, access to new resources and competencies, the development of new activities and new markets, or the reinforcement of the competitive position. The increasing contribution of the alliances to the turnover and the organization of the activities of the firm make the portfolio as a key strategic asset. Our research question relates to the definition of an integrating model which takes the multidimensional nature of alliance portfolio management into consideration. In an attempt to improve it, our objective is to suggest a modeling of the portfolio management based on recognized and complementary corpuses: the resource-based approach and the evolutionary model. Specifically, we develop an emerging approach based on the concept of dynamic capabilities (Teece et al., *Strateg Manag J* 18:509–533, 1997) using business intelligence, networking, alliance management, and absorptive capabilities. The creation of an “alliance unit” plays a crucial role in the development of the alliance portfolio management capabilities. This model aims to optimize the composition and the management of the alliance portfolio to improve the value creation linked to the alliance strategy and the firm performance so that it obtains a specific advantage.

1 Introduction

The increase in alliances since 1980 has generated an extensive literature which may be broken down into three important phases:

- During the first decade (1980–1990), the studies mainly focus on the theoretical framework (transaction costs theory, resource-based approach, etc.) and phenomenological analysis (sectoral, typological, etc.).

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- The second decade (1990–2000) deals with issues regarding the management and control of the alliances, relating to variables such as trust, organizational learning, performance, etc.
- Since 2000, many studies develop an approach based on the concept of alliance portfolio and its management becomes a priority.

This paper is written in accordance with this recent trend which aims at going beyond the framework of the usual alliance to look at alliance strategy as a whole. While the “why” question has been widely discussed, the question of “how” to manage an alliance portfolio is barely broached except in relation to recommendations in relating to organizational and instrumental arrangements.

Our research question relates to the definition of an integrating model which takes the multidimensional nature of alliance portfolio management into consideration. In an attempt to improve it, our objective is to suggest a modeling of the portfolio management based on recognized and complementary corpuses: the resource-based approach and the evolutionary model. Specifically, we develop an emerging approach based on the concept of dynamic capabilities (Teece et al. 1997) using business intelligence, networking, alliance management, and absorptive capabilities directed by a specific structure, the alliance unit.

It must be underlined that the approach followed here is based on a review of academic literature and is therefore in accordance with a deductive approach which has not been empirically validated. It is meant to trigger a research trend on the methodology of an efficient alliance portfolio management.

Firstly, the concept of alliance portfolio is defined. Then, a theoretical framework for the analysis of portfolio management is suggested to identify the variables and stakes of alliance portfolio management, based on a review of the literature (Sect. 1).

Secondly, a modeling of alliance portfolio management is suggested based on the development of dynamic capabilities as defined by Teece et al. (1997). Having specific capabilities would enable the firm to benefit from a competitive advantage, source of partnership annuity (Sect. 2).

2 The Basis of Alliance Portfolio Management

Authors who were interested in interfirm cooperation and who use the concept of portfolio sometimes disagree on its components. Thus, a specific delimitation of its boundaries is a prerequisite (Sect. 2.1) before demonstrating the benefits of the dynamic capabilities model (Sect. 2.2) and suggesting an analysis of the main components of alliance portfolio management (Sect. 2.3).

2.1 *The Alliance Portfolio: A Concept Requiring Specification*

While the concept of alliance portfolio is increasingly being used in academic literature, few authors have endeavored to define this concept with precision. The term portfolio is generally seen as obvious, in a similar fashion as the investment portfolios that Markowitz (1952) popularized in his analysis of risk management under uncertainty. It is however important to specify its boundaries in order to clearly distinguish it from the concept of alliance network.

Indeed, the concept of alliance network is widely developed, and some authors even go as far as to use the terms alliance “network” and “portfolio” alternately. Using a more restrictive approach of the reticular structure, based on the work of Gomes Casseres (1994) and Geurts and Van der Zee (2001), we define the alliance network as *a subgroup of interconnected firms, directly or indirectly associated via agreements and belonging to the same industry or connected industries*. These players have a specific common objective: to offer a service together or the standardization of a technology, for example. In practice, the management of a network is often carried out by a dominant firm (or a limited number of leader firms), and this structure competes with other networks or isolated firms. Thus, the examination of the alliance portfolio of a firm often reveals its link with several networks. Consequently, we can consider that certain recommendations made by authors who have worked on alliance network management may also apply to alliance portfolio management.

Some approaches to alliance portfolio are too restrictive, like that of Doz and Hamel (1998) who define alliance portfolio as “all the distinct bilateral alliances in which a firm is involved.” By including only dyadic agreements, these two authors implicitly deny interactions between some alliances. For example, this definition excludes multilateral alliances like Airbus which they refer to as “alliance constellation.” This is also the case for Reuer and Ragozzino (2006) who only include international joint ventures.

In contrast, other definitions are too extensive when they include “any strategic alliance, whether active or closed” (Wassmer 2010) for, only the alliances in progress are components of the portfolio.

Therefore, we define the alliance portfolio as “all the alliances contracted by the same firm, in which it is directly involved at a given time, notwithstanding the legal framework, the function concerned and the number of partners” (Blanchot and Guillouzo 2009).

Until the beginning of 2000, the alliance portfolio was only referred to during the study of the alliance policy of a given firm or for sectoral analysis. The awareness of the necessity to adopt an integrated approach to the alliance practices of a firm is a recent development as can be seen in Anglo-Saxon publications dealing with alliance portfolio and its management.

2.2 The Benefits of the Dynamic Capabilities Model

The approach used here refers to the resource-based view initiated by Penrose (1959) and popularized by the works of Wernerfelt (1984) and Barney (1991). This model states that the success of a firm depends on its possession of resources which are rare and difficult to duplicate. It is thus in opposition with Porter's model based on competitive forces (1980). To complement it, we also use the evolutionary approach (Dosi 1982; Nelson and Winter 1982) which uses very close foundations and develops the concepts of trajectory and path dependency to explain different spatiotemporal paths of the firms.

The first developments focused on specifying the concept of resources and isolating some components like competencies and capabilities. A capability is defined by Makadok (2001) as a specific, nontransferable resource, integrated in the organization, which improves the productivity of the other resources possessed by the firm.

One criticism of the resource-based approach is the relative static nature of the resources involved in contrast to the dynamic nature of the phenomenon under study. Thus, the concept of dynamic capabilities developed by Teece et al. (1997), based on an evolutionary view of resources, helps to overcome this drawback. Teece et al. define dynamic capabilities as the ability of a firm to integrate, produce, and reorganize internal and external competencies to rapidly adapt to changes in the environment. These are organizational capabilities and they are, by nature, internal, but they can also be external as is the case for alliances which extend the boundaries of the firm and draw us into an interorganizational relationship.

Several authors have attempted to define the concept of management capability of an alliance portfolio. Rothaermel and Deeds (2006) define "the alliance management capability" as the capacity of a firm to efficiently manage several alliances. On their part, Heimericks and Duysters (2007) see "the alliance portfolio capability" as the capacity of a firm to capture, share, distribute, and apply knowledge pertaining to alliance management.

We consider these approaches as being too restrictive for they do not take into consideration the objective of portfolio's optimization via the acquisition of new opportunities. Also, the mechanism that governs portfolio management is not explained fully in such models.

2.3 Determining Factors and Stakes of Alliance Portfolio Management

The different publications show that an interest in alliance portfolio management entails questioning several parameters. An overview of these parameters, in the light of the capabilities model, is provided below.

The first parameter relates to the *number of partners* and the *reassertion of connections*. Some authors, who, namely, refer to the social network theory, have demonstrated that the repetition of the connections with the same partner reinforces mutual trust (Gulati 1998) or the relational capital (Kale et al. 2000) and that these agreements are less costly to manage than agreements with new partners (Park and Kim 1997). The reassertion of connections results in savings in negotiation, coordination, and control costs. It also helps in creating a more appropriate context for a warm and interactive relationship that can help to overcome some forms of resistance and to improve the dissemination of information and know-how.

However, it remains the case that the reassertion of alliances with identical partners can limit access to new knowledge and amplify some common difficulties and failures. Firstly, the firm limits its learning and benchmarking opportunities, by limiting his number of partners. By considering the firm as a set of unique resources and competencies (Barney 1991), any new partner represents a potential source for the enrichment of know-how and knowledge of the firm via organizational learning. In addition, a true dependence can arise between partners connected by several consecutive alliances and their flexibility can consequently be limited. The multiplication of agreements with the same partner increases the risk associated to the possession of an alliance portfolio: a conflict arising in one alliance can impact on all the agreements made with the same associate, as was the case for the agreements signed between IBM and Apple in 1991 (Guillouzo 1996). Relying on statistical tests (Goerzen 2007) demonstrates that repeated connections with the same partner clearly have negative effects under technological uncertainty.

Thus, the identification of potential partners possessing the resources and competencies required is connected to the possession of business intelligence capabilities (Duysters et al. 1999), while the location and gathering of information on these partners depend upon the networking capacities of the firm (Gulati 1995).

A second parameter relates to the *size of the portfolio*, that is, the number of agreements. Researches carried out since 1980, whether theoretically or empirically, have demonstrated that alliances contribute to the improvement of the firm's performance via savings in coordination costs, access to new resources and competencies, the development of new activities and new markets, or the reinforcement of the competitive position (Guillouzo 1996). The various benefits seem to confirm the advantages of an increase in the number of agreements, especially considering that the consecutive involvement of the firm in agreements contributes to the development of an alliance management capability which acts as a leverage effect to improve the performance of future agreements (Dyer et al. 2001). However, the expansion of portfolio's size has its limits. Referring particularly to the high-technology industries, Rothaermel and Deeds (2006) demonstrate that too many alliances may have negative effects. They establish an inverted U-shaped curve relationship between the number of alliances in R&D and the development of new products, irrespective of the agreement type. The breaking point of the curve and the emergence of a decreasing usefulness are directly linked to the limits of the firm in terms of alliance portfolio management capability. Another recent empirical study carried out by Oerlemans et al. (2013) shows that the negative effects of high

levels of alliance portfolio diversity can be turned in positive effects on innovation outcomes by the use of management technology tools.

A third parameter relates to the *appropriation of the results* of each alliance for the improvement of the firm's performance. This appropriation relies on two aspects: the assimilation of innovating technological resources and the acquisition of new managerial and organizational competencies. As pointed out in the resource-based model (Wernerfelt 1984; Barney 1991), the acquisition of new resources and competencies is a dominant objective of alliances. In fact, it is now generally accepted that the partnerships with the suppliers and the customers, as well as horizontal integration, may be an important source of knowledge (Keil 2000).

However, Dyer and Singh (1998) demonstrate that the firms are not equal in their ability to effectively assimilate the knowledge possessed by partners. Thus, some result transfers of a joint R&D failed due to insufficient internal expertise with regard to R&D (Mowery 1983).

On their part, Cohen and Levinthal (1990) argue that the absorption of new knowledge requires the initial endowment of knowledge close to the knowledge desired. The ability of the firm to evaluate, assimilate, and apply knowledge from external partners is connected to its absorptive capacity, which includes both its capacity to learn and to use the relevant results. The fourth parameter relates to the opportunity of a *structure dedicated* to alliance management. Many firms such as Eli Lilly (Rothaermel and Deeds 2006), Philips, Hewlett-Packard, Citicorp, or Oracle (Borker et al. 2004) have created a structure dedicated to alliance portfolio management. In practice, this service is sometimes associated to the marketing department (in the case of some software editors) or to the R&D department (in the case of some pharmaceutical companies), but a study carried out with 150 groups shows that this organizational unit is most often associated to the strategy department (de Man and Duysters 2002). This attachment confirms the key role of the alliance portfolio in the strategic management of firms. If the correlation between the existence of a structure and the size of the firm (or of its portfolio) is not clearly established, the large firms have ventured extensively on this path (Hoffmann 2005), while the literature available shows evidence of a large variety of instrumental and organizational units set up in firms (Blanchot and Guillouzo 2012), to encourage and share the competencies and experience acquired. Results from the data analysis of 144 top Spanish companies show that relational governance and portfolio coordination exert significant influence on the alliance portfolio performance (Castro and Roldan 2015).

In summary, previous alliance portfolio management literature has shown that it is beneficial for organizations to have an alliance function and/or a portfolio manager in charge of alliance portfolio management (Oerlemans et al. 2013) and the questions raised mainly relate to the most appropriate organizational structure.

This literature review enables us to note the wide range of works dedicated to alliance portfolio management. However, it must be noted that, while structures, processes, and tools are recommended, the studies found are still limited in scope and do not offer a global view of portfolio management. Although existing studies on alliance portfolio management mainly focus on alliance experience and alliance

portfolio management best practices, they remain silent on how firms structurally design their portfolio management system (Neyens and Faems 2013).

Overall, we identify four capabilities which may contribute to an efficient management of the portfolio, and we recognize that a dedicated structure facilitates learning as well as shares experience and competencies.

3 Proposition of an Emerging Model for the Management of an Alliance Portfolio, based on Dynamic Capabilities

The articles studied in the previous section confirm the relevance of alliance portfolio management. They consider the creation of organizational and instrumental units and, in some cases, highlight the benefits of portfolio management in terms of value creation and performance. However, the available literature does not suggest the modeling of portfolio management using a dynamic approach.

In this second section, our objective is to try to define a portfolio management approach for optimization purposes. The emergent model suggested is based on the development of dynamic capabilities (Sect. 3.1), and the setting up of a structure dedicated to alliances (Sect. 3.2). The specific nature of the alliance portfolio management capabilities is to provide the firm with a competitive advantage (Sect. 3.3).

3.1 The Creation of Dynamic Capabilities: Source of Optimization of the Alliance Portfolio Management

Relying on the interdependent components of the alliance portfolio, we use a systemic approach of alliance portfolio management which requires four main categories of capabilities joining and complementing each other.

3.1.1 The Development of Business Intelligence Capabilities

The optimal enrichment of the alliance portfolio via the grasp of new opportunities is linked to *the relevance of different information provided by the business intelligence system*, about potential partners and/or alliances linked by competitors. However, while the role of technological intelligence and competitive intelligence is widely analyzed in the literature, the specific nature of the partnership intelligence is barely broached.

The objective of a business intelligence system focused on the alliances contracted and the partners involved is to provide a synoptic view of the alliance strategies used in a given sector. As noted by Duysters et al. (1999), the highest

performing firms set up “business intelligence” units to ensure that new developments are identified. The partnership intelligence completes the technological intelligence which aims at following various evolutions which concern the firm’s business activities, identifying the emerging or embryonic technologies developed beyond its frontiers, and at detecting the technological opportunities.

We consider a partnership intelligence which is not limited to a search for information on the firm’s partners only but explores all the alliances contracted at the sector level. The partnership intelligence must not only provide information on the web of connections made with other firms by the firm’s partners under consideration but should also allow the reorganization of the alliance portfolio of the main players of the industry. The objective is to establish a true cartography of the partnerships contracted in the main fields of activity of the firm and evaluate the alliance portfolio of each competitor. This knowledge of the competitors’ alliance portfolios then allows for a benchmarking approach.

The grasp of opportunities and the avoidance of association with potential partners seemingly unreliable thus depend on partnership intelligence capabilities. Moreover, contact with potential partners is also linked to the firm’s ability to create social ties.

3.1.2 The Development of Networking Capabilities

The ability of a firm and its members *to create interpersonal or interorganizational social ties* is a source of opportunities for cooperation. This statement is based on the social network theory initiated by some sociologists (Granovetter 1973) and the possession of a wide and sustainable relationship network being seen as part of the social capital.

First considered at an interpersonal level, this approach has been widely developed and extended to include interorganizational relationships. Granovetter’s theory (1973) on the strength of the “weak ties” and that of the “structural holes” (Burt 1992), for example, demonstrates how the structuring of a network and the key player’s positioning within this network can provide the latter with competitive advantages.

As highlighted by Meschi (2006), the interorganizational network is seen as both an internal market of partners and a set of embedded interorganizational connections. As an internal market, the network enables its members to create new links within it. The network is thus a dynamic entity which evolves due to the development and the reorganization of the connections between the same members. As a set of embedded connections, the network offers a unique window on the resources, the objectives, and the behavior of one and all to each of its members. By following this line of reasoning, Gulati (1995) has demonstrated that if two firms have a partner in common, this context encourages the signature of an alliance between these two firms.

As soon as the *ad hoc* partner is contacted, the question of alliance management is raised. This issue is widely discussed in the literature.

3.1.3 The Development of Alliance Management Capabilities

The management of an alliance refers to its control. Controlling an alliance entails the regular monitoring and adjustment of its attributes in view of modifying the undesirable perceptions and behavior. The creators and the controllers of an alliance can activate different managerial leverages in view of improving its performance. The processing of information and the modes of communication, the decision processes, the conflict resolution mechanisms, the resources, and incentive distribution systems are particularly important elements as they influence mental states and behaviors. These leverages can be mobilized to manage the relationship between the partners and the common teams and/or the joint entities set up (Blanchot and Guillouzo 2011).

In this sense, the alliance management capability, understood as the capability to control an alliance individually, is only a component of the management capability of an alliance portfolio.

The consecutive involvements of the firm in various alliances contribute to the creation of an alliance management capability, which acts as leverage to improve the performances of future agreements (Dyer and Singh 1998). These capabilities are mainly analyzed at the level of the follow-up and the progress acquired of the cooperation. They are based on the accumulated experience and know-how, and they are mostly derived from implicit knowledge that is unique and difficult to duplicate.

Acquiring alliance management capabilities is crucial to limit the failure rate of agreements, but the success and the performance of an alliance also depend on the ability of the firm to acquire new knowledge and know-how.

3.1.4 The Development of Absorptive Capabilities

As highlighted by Mowery (1983), as well as Cohen and Levinthal (1990), the firms which have their own internal R&D unit benefit from a context more inclined to integrate information and grasp opportunities coming from the outside. Indeed, the technological innovation initiated and developed outside can be fully assimilated and transformed into economical innovation only under certain conditions. One of the main conditions is the firm's possession of an absorptive capability in order to be able to assimilate new knowledge.

However, it seems necessary to go beyond R&D to also consider the spread of positive externalities (distribution of spillovers; Almedia and Kogut 1999). Indeed, the results of the cooperation are not limited to the innovations developed outside the firm but also include information on the production processes or commercial data. The knowledge spillovers represent all information gathered from a partner, resulting from interactions between the allies. The quality of the inter- and intraorganizational information transfer processes determines the proper internalization of these spillovers.

The variety of the exogenous sources of innovation, knowledge, and information confirms the need for the development of absorptive capabilities able to encourage the acquisition of knowledge and enrich all the functions of the organization. As highlighted by Nooteboom (2004), improved absorptive capacities enable to bridge some cognitive distance and collaborate with organizations which are cognitively quite remote.

These four capacities are thus components of the portfolio alliance management capabilities. They are interrelated in a systemic framework.

3.2 A Dedicated Structure as Catalyst for the Alliance Portfolio Management Capabilities

The development and articulation of the capabilities do not take place spontaneously; they require a structure which is able to mobilize them and direct them, as soon as they are generated by the different functions of the firm.

The aim of an integrated approach is to increase the value of all the alliances. This becomes the main concern of portfolio management. It is based on the coordination of all the components of the firm which participate at different levels in the organization and the setup of cooperation practices. The importance and the diversity of the tasks which must be carried out confirm the need for the creation of a specific structure, mostly in charge of:

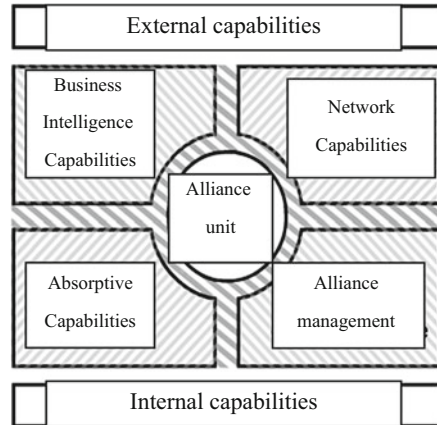
- Capitalizing on the experience acquired in the negotiation and the follow-up of the different types of agreements contracted
- Helping in the proper progress of the ongoing agreements and the realization of new projects
- Initiating new directions and ensuring the optimization of the alliance portfolio

A governance structure for the alliance portfolio seems to be essential to encourage cooperation initiatives, supervise the alliances, solve potential conflicts of interest between the different parties involved, and ensure the cohesion of the alliance strategy. The “alliance unit” plays a crucial role in the development of the alliance portfolio management capabilities. This unit is both connected to top management, which directs and controls the alliance strategy, and the operational divisions for a decentralized management of each agreement. It must also suggest relevant processes for negotiation, follow-up, and cessation of cooperation, develop evaluation and training methods, create analysis tools and grids, etc.

Overall, for a more effective management of its alliance portfolio (cf. Fig. 1), the firm will attempt to develop the capacities discussed, so as to better:

- Identify new opportunities (business intelligence capabilities)
- Contact and gather information on potential partners (network capabilities)
- Manage each of the alliances (alliance management capabilities)
- Integrate new resources and competencies (absorptive capabilities)

Fig. 1 Modeling of the management of an alliance portfolio



This active search for capability organization will only take place if initiated by the alliance unit which will conduct the initiatives of various components of the firm while providing them with its know-how and experience (tools, procedures, etc.).

3.3 *The Portfolio Management Capabilities: Source of a Competitive Advantage*

In this last point, we analyze how the accumulation of alliance portfolio management capabilities leads to the creation of a rare resource, generating a lasting competitive advantage. Consequently, we focus on some specificities discussed in the resource-based approach. Indeed, the “evolutionary” model specifies that the tacit characteristic of resources, their causal ambiguity, and their complexity hinder organizational learning and, consequently, this becomes a barrier to imitation by competition (Barney 1991).

The tacit nature of the management capabilities of an alliance portfolio lies in their specificity. They are time-consuming to create, linked to accumulated experience and embedded in the organization, consisting mostly of knowledge and know-how that cannot be codified. As a result, they are difficult to transfer. Vapola et al. (2010), in a study based on five multinational corporations (MNCs), show that global alliance portfolio management differs from MNC to MNC and depends on the MNC’s international strategy. In data processing industry, a relation between alliance portfolio management and MNCs’ trajectories was identified too (Guillouzo and Thenet 2007).

The causal ambiguity can be defined as the imprecision which exists in the causal relationship between actions and results (Reed and de Filippi 1990). In the case of the alliance portfolio, it resides in the difficulty to establish a close

relationship between the alliance portfolio management and the performance of the firm, especially since the results generated by the alliance portfolio (innovation, standardization, grasp of new opportunities, etc.) are rarely measurable in short term. When the impact of a decision in the portfolio's management cannot be clearly identified, the imitation of good practices is difficult for a competitor.

Finally, the portfolio is a heterogeneous entity due to the variety of its components, the multiplicity of the connections, etc. The complexity of its management can be seen at the level of the routines, the knowledge, and the know-how which must be mobilized, most often complementarily or in interaction. These capacities are thus difficult to transfer, due to their variety and their overlapping nature.

The three characteristics that have just been discussed (tacit nature, causal ambiguity, and complexity) impact on a resource which is unique and difficult to duplicate. They are therefore clearly established in the case of the management capabilities of an alliance portfolio. Furthermore, effective dynamic capabilities generate auto-reinforcement mechanisms, by rendering the firm more attractive for future partners, while the strengthening of its capacities allows for the possibility of an increase in the portfolios' size.

Overall, the efficient management of an alliance portfolio gives the firm a strong (strategic role of the portfolio) and lasting (low duplicability of its capacities) competitive advantage. This advantage provides a portfolio rent, that is, a profit linked to the possession of superior portfolio management capabilities.

4 Conclusion

This paper enables us to justify the requirement to go beyond the usual management of alliances and to adopt an integrated approach in view of increasing the value of the alliance portfolio. The increasing contribution of the alliances to the turnover and the organization of the activities of the firm make the portfolio as a key strategic asset.

In theory, our analysis enables the development of a modeling of alliance portfolio management based on a renowned theoretical corpus, using dynamic capabilities which combine the benefits of the resource theory and the evolutionary model.

With regard to management aspect, the model developed must enable the directors to better identify the leverages for an improvement of the components of their portfolio and for the value creation linked to the alliance strategy, in view of obtaining a specific advantage.

This model suggests other developments to verify the possibility of other components of alliance portfolio management capabilities. Besides, this emerging model is based on a deductive approach and calls for wide empirical verification. Complementary research on thorough studies, essentially of a qualitative nature, to validate the model and better identify the processes generating dynamic capabilities, is required. This is certainly a difficult task due to the fact that the management

capabilities discussed are relatively unobservable. However, this difficulty could be bypassed by adopting an indirect measurement approach (Rothaermel and Deeds 2006). Finally, a second way of research could consist of the elaboration of useful new management tools for managers faced with the complexity and plasticity of the portfolio.

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