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Heterogeneity, diversity and complementarity in alliance portfolios

Mar Cobeña*, Ángeles Gallego, Cristóbal Casanueva

University of Seville, Department of Business Administration and Marketing, Avda Ramón and Cajal, 1, 41018, Spain

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A B S T R A C T

The divergence that a firm manages to achieve because of its partners is a fundamental question in an alliance portfolio configuration. Diversity can refer not only to the differences between the focal firm and its partners or between the partners themselves but also to the differences arising from various resource endowments in the alliance portfolio. Understanding the significance of these different sources, how they interrelate, and how they affect the firm performance is an unresolved question as unclear definitions and opposing arguments are proposed. This paper expounds the concepts of partner heterogeneity, alliance portfolio diversity, and network resource complementarity to gain a deeper comprehension of the alliance portfolio configuration and how it affects performance. Our analysis of airline alliances at a global level reveals the central role of resource complementarity in the focal firm performance.

1. Introduction

Strategic alliances play a vital role in firm survival as long as they contribute external resources that allow firms to gain and maintain competitive advantages (Mu, Love, & Peng, 2008). These external resources are referred to as network resources (Gulati, 2007). Access to them and their eventual use is a key motivation for the company to involve itself in interorganizational ties and alliance formation.

In very competitive and highly fluctuating business environments, some organizations usually enter into multiple agreements with other firms to develop various competitive advantages simultaneously. The set of firm alliances is referred to as its alliance portfolio, and it generates a need for global and simultaneous management of all alliances so that the company achieves its objectives (Wassmer, 2010). Hoffmann (2007: 834) stated that alliance portfolio compositions “determine the quality, quantity, and diversity of information and resources to which the focal company has access.” In other words, the global firm's network resource access will be determined by who its partners are (in different alliances) and by those partners' resources.

Previous literature about Network Theory and Resource-based view has highlighted that network resources to which a company has access through its relations should be complemented and/or combined with its own resources (Chung, Singh, & Lee, 2000; Eisenhardt & Schoonhoven, 1996; Lavie, 2006; Mitsuhashi & Greve, 2009; Stuart, 2000; Wassmer, 2007; Zheng, Li, & Wu, 2013). Therefore, it is relevant to find partners that are different from the focal firm and partners with resources that differ from its own resources.

Baum, Calabrese, and Silverman (2000) previously indicated the need to configure alliance portfolios, within their classic conceptualization, to permit access to more divergent information and capabilities. Diversity, nonredundancy, synergy, and the breadth of partner resource characteristics are relevant elements connected to the company's performance that form part of the research agenda on alliance portfolio configuration (Wassmer, 2010). In the recent literature, even greater interest has been expressed in evidence that shows how different aspects of the alliance portfolio configuration (particularly diversity and/or similarity between firms and between the resources that they own) affect company performance (Collins & Riley, 2013; Cui & O'Connor, 2012; De Leeuw, Lokshin, & Duysters, 2014; Duysters & Lokshin, 2011; Kim, 2014; Lavie, 2007; Sarkar, Aulakh, & Madhok, 2009).

However, at a conceptual level, there is still a lack of clarity over the use of different words, and there are levels of analysis that describe the circumstances in which an alliance portfolio configuration improves performance. Words such as heterogeneity, diversity, or complementarity are used abundantly to refer to different situations and levels. On occasions, the different terms appear mixed up with the same definition: “Alliance partner

* Corresponding author.
E-mail address: mcobena@us.es (M. Cobeña).

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heterogeneity refers to the breadth or diversity of the complementary capabilities held by different alliance participants" (Lin, 2012) and "Diversity refers to the heterogeneity of resources or knowledge and thus yields the potential for novel combinations to emerge" (Vanhaverbeke, Gilsing, Beerkens, & Duysters, 2009). Therefore, there is a need to clarify the concepts that are used in the previous literature before referring to the alliance portfolio diversity.

Although the different sources can be broader and can refer to structural questions and to both geographic and cultural distances (Ahuja, Polidoro, & Mitchell, 2009; Lavie & Miller, 2008), the previous literature has indicated that the basic divergence sources focus on the differences between both partners and resources (Gulati, Lavie, & Madhavan, 2011; Kale & Singh, 2009). The differences between the alliance portfolio partners may arise between them or with the focal firm. Following previous papers on network approach strategy, this work centers on the different sources that, in a direct way, are linked to the network resources and understand network resource as partner resource endowment (Lavie, 2008).

Earlier research has noted firm heterogeneity as a preliminary factor in the existence of complementarity, and both concepts are linked to business performance (Baum et al., 2000; Burt, 1992; Lavie, 2006; Mitsuhashi & Greve, 2009; Wassmer, 2007). Other studies indicate the way in which company homogeneity stimulates innovation and improves results (Ahuja, 2000; Cui & O'Connor, 2012). Therefore, there is a certain controversy about what the best type of partner might be to improve the business performance. Previous studies have proposed arguments and evidence that indicate that holding a more diverse alliance portfolio and one contributing complementary resources yields positive or negative results or results that change over time. There are no reviews that discuss the different forms of differences that can arise in an alliance portfolio and how these forms are interrelated with each other (e.g., if some may be the antecedents or consequences of others). Therefore, there is a gap in the literature that covers the various ways of considering divergence or convergence in the alliance portfolio configuration, the possible connections between them, and how differences affect firm performance in different ways.

The aim of this work is to look more deeply at the question of the alliance portfolio configuration following the lines marked out by Hoffmann (2007) and Wassmer (2010). The objective is to contribute to a better understanding of the relations between the three basic forms of understanding the differences in alliance portfolio configuration (heterogeneity between the focal firm and its partners, diversity between the partners, and resource complementarity) and how these (each one separately and in relation to each other) affect the business performance. Therefore, this work will seek to specify whether they are related in either a positive or a negative way to the results (or in a nonlinear way) and whether they do so directly or indirectly. Moreover, this paper defines these three forms of difference in an alliance portfolio.

Codeshare alliances shared between airlines at an international level have been considered for this purpose, employing data from 135 alliance portfolios that include the main companies in the sector and represent over 70% of the total.

2. Theoretical review

The problem of how the focal firm selects more or less different partners is a key in the study of alliance portfolios (Castro, Casanueva, & Galán, 2014). The variety of partners and the divergence of the resources that they contribute are decisive for the alliance portfolio configuration (Hoffmann, 2007).

However, the following key questions surround what we consider a different partner. How do we analyze the differences? What is the basis of those differences? Placing the focus on network resources (Gulati, 2007; Lavie, 2008), alliance portfolio divergence has been considered in numerous previous studies. A review of the literature shows that an unresolved conceptual problem exists over the name of each concept (see Appendix).

In this research, three differentiated concepts are proposed to analyze divergence and convergence within an alliance portfolio: heterogeneity, portfolio diversity, and complementarity. We considered that heterogeneity refers to "how different the organization is from its partners" (Gulati et al., 2011), diversity is "the extent of variance in a focal firm's alliance partners" (Collins & Riley, 2013), and complementarity is "the extent to which a partner contributes non-overlapping resources to the relationship" (Kale & Singh, 2009).

Business networks have to be considered at two levels. The first is the dyadic level that relates the focal firm with each one of its partners and proposes whether they are different because of their characteristics or because of their resource endowment. The second is at the egonet level—alliance portfolio. At this level, the differences between the focal firm egonet members are considered: between their partners. A distinction should be made between whether the differences refer to the firm characteristics or to their resource endowment.

Table 1 sets out a conceptual framework with which to analyze the difference in the alliance portfolio, which considers three sources of divergence: differences between the characteristics of either the firms or the resources and the consideration of two network levels (dyad and egonet). Each new partner choice in the alliance portfolio configuration is a commitment and has an effect at the dyadic level (specific alliance with the new partner) and at the global or network level as long as it shapes and modifies the egonet characteristics and structure (alliance portfolio).

In Table 1, heterogeneity is linked to the existence of different attributes between two partners. It is a similar concept to the one used by Gulati et al. (2011), where they refer to differences between the firms' characteristics that create an alliance and the Parkhe's (1991) type II diversity. Therefore, heterogeneity focuses on the differences between dyadic pairs (focal company and each of their partners' characteristics, one by one). Diversity centers on the ego network: all focal firm partners without the focal firm itself. In this way, the differences between the alliance portfolio members are considered, without considering focal organization characteristics. This definition of diversity is similar to those given by Collins and Riley (2013) and Jiang, Tao, and Santoro (2010). Finally, complementarity refers to the comparison of the resource endowments (and the nature of those resources) between the focal firm and its partners. Complementarity refers to finding the resources that the focal firm needs in another firm when they find the ideal combination and their effect is greater together than it is individually (Gulati, 1999). If both the partners' resources are similar, then those resources will be redundant (Huggins, 2010).

With regard to the relations between these three divergence sources (partner heterogeneity, alliance portfolio diversity, and network resource complementarity), previous literature has sometimes resorted to one of those relations as a proxy for the other; at other times, these relations have coincided with each other and the results have had variable effects. Thus, some studies have considered heterogeneity as a synonym of diversity (Beckman & Haunschild, 2002; De Leeuw et al., 2014; Duysters & Lokshin, 2011). In other studies, there is no clear separation between diversity and heterogeneity (Collins & Riley, 2013; Jiang et al., 2010). Various studies have linked complementarity to creating alliances with heterogeneous partners, which contribute to the minimization of the overlapping (Abuzaid, 2014; Chung et al., 2000; Duysters