



Alliance portfolio classification. Which portfolio do you have?

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Alliance portfolio classification. Which portfolio do you have?

ABSTRACT

Purpose: The purpose of this article is to propose and discuss a systematic theoretical classification of alliance portfolios that allows to elucidate and develop the concept.

Design/methodology/approach: The study applies a conceptual approach. A review of the literature was carried out to support the conclusions of this paper.

Findings: The results of the classification identify three types of alliance portfolio, according to the level of management that each of them requires: additive; strategic and managed and strategic. These portfolio typologies are analyzed in an evolutionary perspective.

Practical implications: This article is of interest to managers as it emphasizes the management of the alliance portfolio, highlighting the elements or characteristics that determine the transition from one type of portfolio to another.

Originality/value: This paper contributes to the consolidation and reorientation of the extensive research into alliance portfolios, and proposes a systematic classification that can help to interpret the results of research and guide future studies.

INTRODUCTION

The last three decades have witnessed a considerable development in the phenomenon of strategic alliances (Pangarkar et al., 2017). Not only has the number of these relationships increased, but also their scope has been extended. Whereas in the past firms established alliances and collaborations to carry out simple or marginal activities, they are now seen in

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2
3 the different activities along the value chain (Bruyaka and Durand, 2012). As a result, many
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5 firms have become embedded in networks of relationships that are fundamental to their
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7 success and survival (Ahuja et al., 2012; Gulati et al., 2000), while at the research level this
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9 development has prompted a considerable increase in the number of studies of
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11 interorganizational relations (Lee et al., 2017; Parmigiani and Rivera-Santos, 2011; Wassmer,
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13 2010).

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18 The literature analyzes inter-organizational relations from three different perspectives: the
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20 dyadic, portfolio and network levels (Zaheer et al., 2010). The dyadic level studies the
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22 relationship between two connected actors, while the network level investigates the
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24 characteristics and behavior of the inter-organizational network as a whole. Finally, the
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26 portfolio level studies the set of strategic alliances of the focal company; that is, its ego-
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28 network. The research focusing on alliance portfolios has generated a wealth of literature in
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30 recent years [cf. Chiambaretto and Fernandez (2018), Parmigiani and Rivera-Santos (2011)
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32 and Wassmer (2010) for a review], but despite these advances, the literature is still quite
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34 fragmented, due, on one hand, to the multiple issues that have to be addressed and, on the
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36 other hand, to the mixed results obtained (Lee et al., 2017; Parmigiani and Rivera-Santos,
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38 2011).

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44 The concept of the alliance portfolio is characterized by its breadth and complexity (Wassmer,
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46 2010), and embraces a wide range of phenomena. Consequently, this concept has a general
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48 and instrumental nature (Bunge, 2017). To a certain extent, these features assimilate the
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50 concept of the alliance portfolio into an umbrella concept (Hirsch and Levin, 1999), given that
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52 its definition embraces a wide and varied reality. Umbrella concepts suffer from problems of
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54 vagueness (Bunge, 2017) and validity (Hirsch and Levin, 1999). One way to address these
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56 problems, which hinder research development and the convergence of results, is to use
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3 classifications or typologies that reduce the extensional vagueness of the concept (Bunge,
4 2017; Cornelissen, 2017, Doty and Glick, 1994; Hirsch and Levin, 1999).

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8 The aim of this paper, therefore, is to develop and elucidate the concept of alliance portfolios
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10 through a theoretical systematic classification, to enable a clear understanding of the variety
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12 of realities that are included within the concept. The basis of the proposed typologies lies in
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14 the main topics that emerge analyzing the literature: the definition of a strategic purpose for
15
16 the set of alliances and the management of the alliance portfolio. The strategic purpose of the
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18 portfolio directly affects the formation of alliances and the composition of the portfolio
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20 (Hoffman, 2007, McGill and Santoro, 2009), while portfolio management is related to taking
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22 advantage of the synergies and reducing the conflicts between the alliances that make up the
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24 portfolio (Asgari et al., 2018, Hoehn-Weiss et al., 2017). These two fundamental questions
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26 are embedded in the definition of portfolio capability (Hoffmann, 2005; Sarkar et al., 2009),
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28 which constitutes the element that characterizes the most developed portfolios (Castro and
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30 Roldán, 2015, Neyens and Faems, 2013).

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37 The results of the classification identify three types of alliance portfolio, according to the level
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39 of management that each of them requires: *additive*; *strategic*; and *managed*. An additive
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41 portfolio does not imply any type of coordinated management by the company, since each
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43 alliance is managed individually, without any strategic intent for the set of alliances. A strategic
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45 portfolio adds a strategic component to the portfolio through an alliance policy and a strategic
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47 orientation (Hoffmann, 2005; Ozcan and Eisenhardt, 2009). Finally, the managed portfolio also
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49 requires an element of coordination in order to avoid conflicts and achieve, as far as possible,
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51 synergies between alliances. (Asgari et al., 2018, Hoehn-Weiss et al., 2017, Wassmer and
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53 Dussauge, 2011). It is clear that there is some overlapping of types, so that all of the managed
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3 portfolios are also strategic, and they would all be included in the additive-type portfolio,
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5 which is the general and basic definition of alliance portfolio (Lavie, 2007).
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8 This paper contributes to the consolidation and reorientation of the extensive research into
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10 alliance portfolios, and proposes a systematic classification that can help to interpret the
11
12 results of research and guide future studies. At the academic level, the proposed classification
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14 serves to improve the accuracy of a broad concept, increasing its validity (Bunge, 2017) and
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16 contributing to its future development (Hirsch and Levin, 1999). At the same time, this
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18 systematic classification makes it possible to demonstrate the process of the emergence,
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20 development and evolution of a portfolio, since the three types of portfolio can also be viewed
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22 as the different phases of an evolutionary process (Hite and Hesterly, 2001) that starts with
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24 an additive portfolio and ends with a managed portfolio (Ozcan and Eisenhardt, 2009). Finally,
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26 a more precise description of the concept assists the interpretation and ordering of the
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28 literature that has been produced to date, while highlighting possible lines of research that
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30 have so far received little attention. From the business practice perspective, this article is of
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32 interest to managers as it emphasizes the management of the alliance portfolio, highlighting
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34 the elements or characteristics that determine the transition from one type of portfolio to
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36 another. When a company establishes a number of relationships with other companies, it may
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38 be advisable to consider a coordinated and strategic management of this set of alliances.
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47 We present our arguments as follows. In the next section, we analyze and review the
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49 definition of alliance portfolios with respect to the literature, highlighting the reasons that
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51 lead us to propose a systematic classification. We then identify the methodology and criteria
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53 for a systematic classification of the various alliance portfolios. Next, we present the different
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55 types of portfolio that we have identified and analyze them in an evolutionary perspective.
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3 This paper ends with a section dedicated to the conclusions in which we discuss the
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5 implications of our contributions, and possible directions for future research are suggested.
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10 11 **THE NEED TO CLASSIFY ALLIANCE PORTFOLIOS** 12 13

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15 The literature on alliance portfolios has been inspired by several approaches and theories,
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17 including the resource-based view of the firm and organizational learning; but the early
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19 development of this research stream was most influenced by the social network theory
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21 (Gulati, 1999). Consequently, the terminology used in its early years reflects many of the ideas
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23 and concepts of social network theory, such as structural holes (Burt, 2009) or strong and
24
25 weak ties (Granovetter, 1979). In fact, the term alliance portfolio first appeared at the end of
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27 the 1990s, in the works of Koza and Lewin (1998, 1999), Stuart et al. (1999) and George et al.
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29 (2001). The previous literature used the terms interfirm network, firm's network or ego-
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31 network to describe this reality (Gulati; 1998; Lorenzoni and Baden-Fuller, 1995).
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37 The term alliance portfolio caught on in the management literature and gradually replaced
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39 the expression ego-network. The two terms were initially considered as synonyms, as
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41 witnessed in Lavie's paper (2007); the first versions use ego-network while in the final version
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43 this is replaced by alliance portfolio. Since then, the term alliance portfolio has become, *de*
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45 *facto*, the only term used in the literature. The alliance portfolio is therefore defined as "a
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47 firm's collection of direct alliances with partners" (Lavie, 2007: 1188), which is a description
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49 of a company's ego network.
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53 Before being applied to the study of interorganizational relationships, the concept of portfolio
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55 was used in the finance literature to support risk assessment, and in the business management
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57 literature to analyze the diversification processes of enterprises (George et al., 2001; Cui,
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3 2013). In the finance literature, Markowitz (1952) was the first to introduce the “portfolio
4 selection problem”, with the aim of helping decision-makers to choose the assets that should
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6 make up an optimal portfolio, guaranteeing a given level of returns by limiting risks (Darmani
7
8 and Hanafizadeh, 2013). In the business management literature, the concept was used to
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10 define strategic decision-making regarding the management of a parent firm’s portfolio,
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12 developing portfolio matrices such as Boston Consulting Group’s Growth-Share Matrix, or
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14 McKinsey’s Industry Attractiveness-Business Strength Matrix (Untiedt et al., 2012).
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20 The introduction of the concept of the alliance portfolio as a substitute for ego-network was
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22 an attempt to bring to the new literature some of the previous applications that the term
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24 portfolio conferred in other disciplines: the idea of risk reduction from finance (Wassmer and
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26 Dussauge, 2011) and the concept of management from strategic literature (Hoffmann, 2005).
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28 All traditional definitions of alliance portfolio adopt an additive perspective (Wassmer, 2010).
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30 That is, they consider an alliance portfolio to be the sum of all the alliances of a firm. Although
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32 this approach is criticized by different authors for the lack of a coherent overview, which can
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34 be dangerous and myopic (Chiambaretto and Fernandez, 2018; Wassmer and Dussauge, 2011,
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36 2012), these definitions have been widely accepted by researchers, and are used in the vast
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38 majority of studies.
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44 From the perspective of the philosophy of science (Bunge, 2017), the definition of alliance
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46 portfolio could be described as both general, since the concept is broad –with very few
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48 characteristic features– and operative, to the extent that it can easily be used in empirical
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50 studies, without delving into the theoretical issues underlying the definition. In contrast, these
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52 types of definitions have the problem of vagueness (Bunge, 2017; Cornelissen, 2017), leading
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54 to results that may be contradictory, or that hinder the accumulation of knowledge about the
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56 phenomenon studied. Consequently, the concept of the portfolio of alliances can be
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3 assimilated, with certain nuances, into an umbrella concept (Hirsch and Levin, 1999: 200), to
4 the extent that they “encompass and account for a set of diverse phenomena”. During their
5 development these umbrella constructs may face a validity challenge, due to the difficulty of
6 definition or making the concept operational (Hirsch and Levin, 1999). In our opinion, and as
7 shown by the fruitful current of research arising from it, the concept of alliance portfolio does
8 not, at least for the moment, present a validity challenge, in the sense of Hirsch and Levin
9 (1999), but its intrinsic vagueness is causing a dispersion of results (Lee et al., 2017) and
10 consequently a problem for the accumulation of knowledge. To overcome these problems of
11 extensional vagueness, the philosophy of science proposes a number of alternatives; with
12 systematic classification being the simplest way to identify the elements of a set and to group
13 them into subsets (Bunge, 2017). Furthermore, tidying up the typologies is a way of
14 overcoming the validity challenge of the concept, in case this problem does occur (Hirsch and
15 Levin, 1999).

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35 The literature on the diversity and configuration of alliance portfolios has proposed various
36 portfolio classifications, based primarily on the types of partners and the kinds of links
37 between them (Capaldo, 2007; McGill and Santoro, 2009). These classifications had a clear
38 empirical orientation and did not question the definition’s additive nature. With the proposal
39 of an alliance portfolio classification, this study pursues three objectives. First, the
40 classification helps to better structure and consolidate the existing literature, allowing
41 progress towards greater consistency in the results obtained (Lee et al., 2017). Second, the
42 distinction between types of portfolios means highlighting the existence of portfolios with
43 different characteristics and the possibility of better or worse portfolios from the point of view
44 of the results obtained. Third, and related to the previous objective, the classification of
45 alliance portfolios aims to show managers the way to achieve so-called high-performance
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3 portfolios (Ozcan and Eisenhardt, 2009), which are characterized by the presence of a strategic
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5 and management component in the alliance portfolio.
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8 9 **METHODOLOGY**

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12 In order to carry out a systematic classification and propose types of alliance portfolios, it is
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14 necessary to analyze the extensive literature and to understand how the concept has been
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16 defined and operationalized. To select the set of articles relevant to our review, and following
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18 a methodology similar to Provan et al. (2007) and Wassmer (2010), we carried out an
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20 extensive search in different electronic databases. – ABI Inform, JSTOR, Science Direct and
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22 Springer Link – looking for the terms “alliance portfolio” (and synonyms) and “alliance
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24 network” (and synonyms) in the title, in the abstract and in the keywords. In order to complete
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26 our database, we have also analyzed the bibliography used in the most recent articles on
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28 alliance portfolios; thus we have cross-checked the reliability of our database. Finally, we used
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30 the “reference cited” tool of the Social Sciences Citation Index (SSCI) of the Web of Science to
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32 find the studies published that cited the most relevant works on alliance portfolios, such as
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34 that of Wassmer (2010), and Ozcan and Eisenhardt (2009) and Hoffman (2005) and (2007).
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36 This extensive bibliographic, that spans nearly 30 years of literature, has produced a total of
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38 145 published articles and book chapter, which have been read, analyzed and synthesized,
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40 discarding those not relevant. Following the three key research areas proposed by Wassmer
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42 (2010), we classified the articles that we analyzed into three broad groups: a) portfolio
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44 composition; b) portfolio type, strategy and evolution; and c) portfolio capability and its
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46 components.
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50 The majority of studies have focused on alliance portfolio composition. With the exception of
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52 a few works (Hoffmann, 2007; McGill and Santoro, 2009) analyzing portfolio composition
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3 strategies, most configuration studies (Duysters et al., 2012; Jiang et al., 2010; Wuyts and
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5 Dutta, 2014) have largely analyzed the impact of a particular portfolio characteristic –such as
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7 the degree of internationalization (Lavie and Miller, 2008), the diversity of available resources
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9 (Cui and O’Connor, 2012), technological diversity (Faems et al., 2010; Wuyts et al., 2004), or
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11 partner type (Baum et al., 2000; Oerlemans et al., 2013)– on portfolio performance, the
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13 amount of innovation or other outputs. Despite being relatively similar and comparable, these
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15 studies have produced mixed results (Lee et al., 2017), which may be attributable to the
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17 construction of the portfolios in the various studies. It is therefore possible to identify studies
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19 that use portfolios that only include alliances of a particular legal nature (Andrevsky et al.,
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21 2016; Reuer and Ragozzino, 2006; Vassolo et al., 2004); or that correspond to a certain area
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23 or function of the company (Andrevsky et al., 2016; Caner and Tyler, 2013; Faems et al., 2010;
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25 Frankort et al., 2011; George et al., 2001; Kim and Choi, 2014; Lahiri and Narayanan, 2013;
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27 Lavie, 2007; Rogbeer et al., 2014; Schilke and Goerzen, 2010; Swaminathan and Moorman,
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29 2009); or that involve connections with certain external actors (Bruyaka and Durand, 2012;
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31 Casanueva et al., 2013; Casanueva et al., 2014; George et al., 2001; Lavie, 2007; Wassmer and
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33 Dussauge, 2012; Wassmer et al., 2017; Wuyts and Dutta, 2014; Wuyts et al., 2004). This has
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35 led to a broad and general definition that is used to describe a wide range of portfolios in
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37 empirical analysis, which hinders the comparison of studies and may lead to a misguided or
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39 biased view of the phenomenon (Lee et al., 2017). The wide variety of operational portfolios
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41 has produced mixed, sometimes inconsistent results that require considerable organization
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43 (Lee et al., 2017).

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45 The second group consists of a series of studies that have analyzed, from a temporal
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47 perspective, the composition of alliance portfolios (McGill and Santoro, 2009), their strategy
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49 (Hoffmann, 2007) or their path-dependent evolution (Lavie and Singh, 2012). With the
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3 exception of McGill and Santoro (2009), these investigations are based on case studies (among
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5 them: Capaldo, 2007, Dittrich et al., 2007; Dyer and Nobeoka, 2000; Hoffmann, 2007; Lavie
6
7 and Singh, 2012) with a focus on the in-depth analysis of the companies and their portfolios,
8
9 without too much concern for the precise definition of the alliance portfolio. This lack of
10
11 attention to the concept lies in the objective of the research, which is not to identify ideal
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13 portfolio composition, but rather to define portfolio strategies or describe their evolution over
14
15 time and the method used, since the study of a particular company does not require a precise
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17 and explicit definition of the portfolio.
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23 The studies in the third group have focused on portfolio capability and how this affects
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25 company or portfolio performance. Alliance portfolio capability (Heimeriks et al., 2009; Schilke
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27 and Goerzen, 2010) is a dynamic capability used in the formation, development and
28
29 integration of an alliance portfolio (Sarkar et al., 2009). This capability consists of multiple
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31 elements and is highly complex, being acquired through a step-by-step process (Hoffmann,
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33 2005). In addition, its difficulty of imitation (Heimeriks et al., 2009) can convert it into a source
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35 of competitive advantage for the company. The alliance portfolio capability comprises three
36
37 main processes: partnering proactiveness (proactive portfolio formation), relational
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39 governance (the governance and monitoring of the portfolio), and portfolio coordination (the
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41 process through which a firm integrates strategy, activities and knowledge flows between its
42
43 different partners) (Sarkar et al., 2009). Other authors include a strategic element in this
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45 capability, which is set out in the proposed definition of alliance policy and portfolio strategy
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47 (Hoffmann, 2005). Firms may develop this ability to a greater or lesser degree, depending on
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49 the emphasis placed on the competencies that determine these dimensions (Draulans et al.,
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51 2003).
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3 From the empirical point of view, the studies that analyze portfolio capability (Castro et al.,
4 2016, Heimeriks et al., 2007, Heimeriks et al., 2009, Sarkar et al., 2009, Sluyts et al., 2011) have
5
6 focused on how the presence of tools-based solutions and functional and staffing units affect
7
8 portfolio or company results (Heimeriks et al., 2009). At the same time, they demonstrate the
9
10 willingness of managers to jointly manage their alliances. The definition of alliance portfolio is
11
12 not relevant in these studies, since they focus more on the tools and functions that enable the
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14 portfolio capability to be identified, without attempting to provide a specific portfolio
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16 definition.
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23 **TOWARDS A CLASSIFICATION OF ALLIANCE PORTFOLIOS**

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28 The review of the literature suggests three main areas for reflection. First, only the studies of
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30 alliance portfolio composition –which form the majority– have explicitly used the definition of
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32 alliance portfolio and have tried to overcome the theoretical issues identified by Wassmer et
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34 al. (2010) through practice. Second, despite the broad understanding of the concept of
35
36 alliance portfolio, empirical research has selected portfolios limited to certain categories of
37
38 alliances or relationships, which have provided contradictory (Lee et al., 2017) or in many
39
40 cases, barely comparable results. Third, the studies highlight two key aspects linked to the
41
42 idea of alliance portfolio: its strategy (Hoffman, 2007, Capaldo, 2007) and its management
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44 (Asgari et al., 2018, Castro and Roldan 2015). The definition of a portfolio strategy affects its
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46 composition (Hoffman, 2007, McGill and Santoro, 2009), while the will to manage an alliance
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48 portfolio is manifested through a series of tools that help the company to better control and
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50 coordinate its alliances (Asgari et al., 2018, Hoehn-Weiss et al., 2017). A company's decision
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52 to develop a portfolio strategy or to begin to manage its portfolio as a whole brings about a
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54 shift from a path-dependent network to develop path-creation strategies (Gulati, 1998). This
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3 allows the company to generate synergies between the alliances that make up its portfolio
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5 while avoiding potential conflicts between them (Wassmer and Dussage, 2011, 2012). These
6
7 two elements are essential to achieve a positive portfolio effect (Vassolo et al., 2014); that is,
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9 the value of the portfolio is greater than the sum of the value of the alliances that comprise
10
11 it. As previously noted, these two elements make up the alliance portfolio capability (Hoffman,
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13 2005).

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15 For this last reason, the systematic classification that will allow us to define the concept of the
16
17 alliance portfolio is based on these two elements of portfolio capability. As we have already
18
19 seen, the literature has used other criteria to classify the portfolios, such as partner type or
20
21 relationships (Capaldo, 2007; Hoffmann, 2007; McGill and Santoro, 2009), but the use of
22
23 portfolio capability and the theoretical development arising from it provides a criterion for
24
25 linking the portfolio types and allows to establish a hierarchy, which is the best form of
26
27 systematic classification (Bunge, 2017). Portfolio capability is also used for classification, since
28
29 we consider that management and strategy are elements that an alliance portfolio should
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31 aspire to (Hoffman, 2005; Ozcan and Eisenhardt, 2009), which in turn provides an evolutionary
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33 aspect to the classification. Additionally, as Faems et al. (2012) have pointed out, portfolio
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35 capability is linked to the performance of the alliance portfolio. This relationship is consistent
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37 with the portfolio typologies that we are going to propose, since the greater development of
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39 the two elements of portfolio capability determines a change between portfolio typologies,
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41 until reaching high-performance portfolios.
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54 *Types of alliance portfolio*

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3 The starting point of our classification is a portfolio of alliances that we labelled “*additive*”,
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5 which represents an alliance portfolio generated in an emergent way following the formation
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7 of successive alliances in a path-dependent process (Gulati, 1998). In this typology of portfolio
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9 each alliance is managed individually. The problem with this approach is that the portfolio
10
11 may end up with conflicting alliances or partners (Wassmer et al., 2010). In this case, the
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13 company does not have portfolio capability, although it may develop its alliance capability,
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15 which is the ability to manage any individual alliance (Schreiner et al., 2009).
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20 The strategic and management elements that make up the portfolio capability are successively
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22 added to this first portfolio category (Hoffman, 2005). First, the additive portfolio undergoes
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24 a substantial change when a strategic intent or strategic perspective is introduced for the set
25
26 of alliances, giving rise to the so-called “*strategic alliance portfolio*”. The strategic objective
27
28 that a company pursues through its portfolio can be achieved either cooperatively or
29
30 competitively (Vassolo et al., 2004). A competitive portfolio consists of a set of parallel
31
32 alliances trying to achieve a particular goal without cooperating with each other. This type of
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34 portfolio may also be known as a real-option portfolio (Vassolo et al., 2004). By contrast, the
35
36 aim of a cooperative portfolio is to achieve the strategic goal through the cooperation and
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38 participation of the various alliances within the portfolio, thus leveraging the synergies
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40 between them. In this second case, each alliance represents a mechanism or an element
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42 within a higher order project. The distinction between a homogenous and a heterogeneous
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44 ego network “demonstrates how firms can benefit from discretionally and strategically
45
46 constructing their alliance networks” (Lavie, 2006 p. 650). By identifying a strategic objective,
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48 our classification identifies a link between alliance portfolio and firm strategy, as established
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50 by a large section of the literature (Hoffmann, 2007; McGill and Santoro, 2009).
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3 If a management element is added to the strategic portfolio, the so-called "*managed*
4 *portfolio*" is obtained. This is an important evolution for the company as it assumes the full
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6 development of its portfolio capability, since it has added the managed component to the
7
8 strategic perspective, making the portfolio a true strategic tool (Hoffmann, 2005), and giving
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10 rise in certain conditions to a high performance portfolio (Ozcan and Eisenhardt, 2009). With
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12 the management of its portfolio, the company aims to ensure the consistency, synergies, and
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14 transfer of knowledge between the alliances in its portfolio. This management component
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16 turns out to be also fundamental for the company when managing conflicts between alliances
17
18 and for managing the cooperative relationships that the company can develop (Asgari et al.,
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20 2018, Chiambaretto and Fernandez, 2018).

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22 One way to verify that a portfolio is managed is to identify an alliance function, although this
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24 is not a prerequisite for this type of portfolio since small and medium-sized enterprises are
25
26 often unable to formalize a specific function for alliance management due to their chronic lack
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28 of resources (Baum et al., 2000; Kale et al., 2002). However, a firm involved in a sufficiently
29
30 high number of strategic alliances would be expected to use an alliance function to manage
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32 all of its alliance-related activities. These activities are not part of the firm's regular business
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34 and therefore require additional skills and capabilities to those it already possesses (Kale et
35
36 al., 2002).

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38 An alliance function addresses a variety of tasks, ranging from identifying potential partners
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40 and forming new alliances, to the ongoing management of the existing alliances and, when
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42 appropriate, the possible closing down or restructuring of alliances (Khanna, 1998). In addition
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44 to these specific activities, the alliance function is tasked with accumulating, storing,
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46 integrating and transferring the knowledge that the firm has obtained through its
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48 relationships (Kale et al., 2002; Sluyts et al., 2011). Finally, having an alliance function in place
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3 has another positive effect for the firm since it emphasizes the importance that it assigns to
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5 its alliances, both internally and externally providing the firm with visibility and legitimacy
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7 (Sluyts et al., 2011). Some studies have demonstrated that this visibility and legitimacy
8
9 improves the firm's stock performance when alliance-related announcements are made (Kale
10
11 et al., 2002). Despite the undoubted advantages of an alliance function for a firm, the presence
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13 of this specific department can also lead to the formation of more alliances than necessary,
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15 due to the department's incentive to amortize its fixed costs over a larger portfolio and the
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17 need to justify its existence (Ahuja et al., 2012). Consequently, it can be concluded that the
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19 presence of an alliance function signals a firm's deliberate intention to manage its set of
20
21 alliances. The inverse relationship cannot be confirmed, i.e., the non-existence of an alliance
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23 function does not mean that a firm does not have a deliberate intention to coordinate its
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25 alliances. The following figure (Figure 1) summarizes the ideas and concepts used in the
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27 systematic classification that was undertaken.
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Insert Figure 1 about here

The three types of alliance portfolio identified – additive, strategic and managed – form a hierarchical classification, to the extent that higher levels retain elements of the lower levels, such that each more specific portfolio is included within the previous one. Figure 2 shows that the “strategic” and “managed” portfolios represent specific cases of alliance portfolios, since they add both management and strategic characteristics to the general definition of the

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3 alliance portfolio. Various reports from consultants and research papers (Heimeriks et al.,
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5 2009) point out that only a small percentage of companies manage their alliance portfolios.
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20 Classification and evolution of alliance portfolios

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24 Further to the results of the systematic classification, it is possible to analyze the types of
25 portfolio identified from an evolutionary perspective. This evolutionary process demonstrates
26 the formation of a portfolio of alliances and its possible development towards the so-called
27 high-performance portfolios (Ozcan and Eisenhardt, 2009). The model presented in Figure 3,
28 using a three-stage process, is an illustration of the ideas that we are going to propose below.
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30 In each phase of this process it can be observed how the alliance portfolio and the firm's
31 strategy affect each other in a coevolutionary process (Hoffmann, 2005).
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54 In the first phase of this process, the company's alliance portfolio is simply a set of "disorderly"
55 alliances with no control, management or objectives (Wassmer et al., 2010). The alliances
56 were formed independently, with no overall vision. By using the term disorderly, we do not
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3 exclude the possibility of an individualized management of the alliances through the
4 company's alliance capability (Schreiner et al., 2009), but we are excluding a joint
5 management of the portfolio as a whole.
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10 Of the two elements that make up the portfolio capability, we consider that the strategic
11 purpose represents the first and natural improvement to an additive portfolio. This is because
12 the inclusion of a strategic perspective is a more basic need for the company and also does
13 not normally require the creation of more or less explicit coordination mechanisms, such as
14 an alliance function. Once the strategic component is established, some companies begin to
15 manage the relationships that develop within the alliance portfolio, establishing an explicit
16 coordination between them and avoiding conflicts. Therefore, they include a management
17 perspective and usually create an alliance function.
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30 In the second stage, the company adds a strategic dimension through a policy of alliances and
31 a portfolio policy (Hoffmann, 2005), creating a strategic alliance portfolio. In this second stage
32 arises the deliberate intention of the focal company to intervene in its alliance portfolio. This
33 stage can be considered to mark the transition from a path-dependent and firm identity-based
34 portfolio to a more calculative and path creation portfolio, which may even be related to the
35 different stages of the company's life cycle (Hite and Hesterley, 2011). This transition from an
36 additive portfolio to a strategic portfolio is gradual, since the pre-existing system of alliances
37 has, over time, led to a path-dependent network that might initially resist and hinder the firm's
38 deliberate strategy (Lavie and Singh, 2012). The transition from an *additive* to a *strategic*
39 portfolio is relevant to the extent that the company includes a strategic intent for all its
40 alliances. In relation to this point, a distinction should be made between strategic alliances
41 and a strategic alliance portfolio. Strategic alliances are "voluntary cooperative inter-firm
42 agreements aimed at achieving competitive advantage for the partners" (Das and Teng, 2000:
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3 33). Consequently, a company may establish different strategic alliances, to the extent that
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5 these cooperation agreements directly affect competitive advantage and are therefore part
6
7 of the firm's strategy. In contrast, an alliance portfolio will be considered *strategic* when a
8
9 specific strategic objective is pursued for the set of alliances of the company, so that the
10
11 different alliances help, either competitively or cooperatively, to achieve that goal. In this
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13 context, the strategic alliance is no longer an individual or isolated way of gaining competitive
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15 advantage, but is part of a coordinated alliance strategy, where individual alliances are no
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17 longer evaluated independently.
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23 In the third and final phase of the process, the company adds a series of tools and functions
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25 to manage its portfolio. This joint alliance management underlines the importance that the
26
27 company gives to the synergies and conflicts, which are developed by the interdependence of
28
29 the alliances that make up a portfolio (Wassmer and Dussauge, 2011). The management of
30
31 this interdependence is crucial for a firm, since synergies and conflicts determine whether the
32
33 value of a portfolio is different from the sum of the values derived from each individual
34
35 alliance (Castro et al., 2015). From a comprehensive perspective, it is clear why firms are
36
37 sometimes involved in alliances that, if analyzed individually, are not justifiable, but which can
38
39 be justified if they are thought to contribute to the portfolio's higher and more global purpose
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41 (Wassmer et al., 2010). Nevertheless, the study of the interdependencies between the
42
43 alliances that make up a portfolio is still in its infancy (for exceptions, see Vassolo et al., 2004;
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45 Wassmer and Dussauge, 2012). The transition from a strategic portfolio to a managed one is
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47 a significant evolutionary advance, since the management of an alliance portfolio is different
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49 from the management of individual alliances (Wang and Rajagopalan, 2015), and there are
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51 different performance implications arising from the interdependence of the alliances that
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53 make up a portfolio (Piening et al., 2016).
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3 The evolutionary process that marks the transition between portfolio types is important
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5 because it highlights a company's awareness of its alliance portfolio. The company begins to
6
7 use its portfolio as an active strategic tool, which allows it to develop a wide range of
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9 possibilities, since the portfolio can be used as a tool: to facilitate strategic change within the
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11 company (Dittrich et al., 2007), to modify the position of the company within a network of
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13 companies (Soda, 2011), to deliberately seek new knowledge to combine it with that of the
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15 company (Rindova et al. 2012), to adapt to the uncertainty of the market (Chiambaretto and
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17 Fernandez, 2016) or to create an ecosystem that allows the company to build and maintain its
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19 competitive advantage (Lorenzoni and Baden-Fuller, 1995; Dyer and Nobeoka, 2000). It may
20
21 also be interesting to link the portfolio's evolutionary process with the life cycle of the
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23 company itself. The literature shows how the alliance portfolio plays a different role in the
24
25 different stages of the life cycle (Hite and Easterly, 2001; Chiambaretto and Wassmer, 2019).
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27 In other words, the portfolio's composition and objectives may change depending on the
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29 stages of the company's life cycle.
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40 **CONCLUSIONS AND IMPLICATIONS**

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45 The literature gives a broad definition of alliance portfolio (Wassmer, 2010); being described
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47 as the set of alliances that a company has with its partners (Lavie, 2007). On one hand, this
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49 definition has allowed a rapid development of the discipline and has worked in the
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51 researchers' favour. On the other hand, the breadth and variety (operational) of the concept
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53 has caused some inconsistencies in the results (Lee et al., 2017) and made it difficult to
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55 compare studies. By undertaking a systematic classification (Bunge, 2017), this paper is able
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3 to propose different types of alliance portfolios, with the aim of providing a clearer definition
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5 of this concept and a better understanding the prolific literature in this area.
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8 Using portfolio capability as the explanatory variable, it is possible to identify two criteria that
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10 enable the classification of the portfolios that companies develop: the existence or not of a
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12 strategic orientation and the presence or not of a portfolio management. The proposed
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14 classification therefore links the alliance portfolio to firm strategy and portfolio capability
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16 (Hoffmann, 2005; Lavie and Singh, 2012). Portfolio strategy forces the firm to consider which
17
18 alliances should be established and which of them should be included in the firm's portfolio
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20 of alliances (Ozcan and Eisenhardt, 2009). Portfolio capability involves decisions regarding
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22 portfolio structure (Capaldo, 2007) and composition, as well the kind of partners a firm should
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24 have as its allies and the type of relations it should establish with them (Dyer and Nobeoka,
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26 2000; Partanen and Möller, 2012), taking advantage of synergies and avoiding conflicts
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28 between the alliances that make up the portfolio (Wassmer and Dussage, 2011).
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35 The classification identifies three types of portfolio: *additive*, *strategic* and *managed*. This
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37 classification is also analyzed in an evolutionary perspective, from a set of individually
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39 managed alliances to the full management of the portfolio as a whole, clearly incorporated
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41 into the company's strategy. This enables us to also link our classification with the literature
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43 on the evolution of alliance portfolios.
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47 Although this classification "provide the basis for strong research by breaking the continuous
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49 world of organizations into discrete and collective categories well suited for detailed analysis"
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51 (Rich, 1992: 758), they may not be an accurate representation of the reality as they express
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53 ideal types or analysis categories (Blau and Scott, 1962). Accordingly, the three types of
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55 portfolio are not clearly distinct groups; rather, the boundaries between them are blurred (as
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57 shown by the dashed lines in Figure 2). A company's alliance portfolio can be placed on a
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3 continuum between the additive portfolio and the managed portfolio, with the strategic
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5 portfolio as an intermediate term.
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10 Contributions to the existing literature

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15 The portfolio classification aims to link the different research streams that have emerged in
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17 the literature (Wassmer, 2010) and to establish conceptual bridges between them. Likewise,
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19 the analysis or distinction of portfolio types makes the results of empirical studies more
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21 comparable. It is not about introducing complexity into the research, but simply identifying
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23 homogeneous groups of portfolios, by the inclusion of control variables or any other means,
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25 to allow more consistent conclusions to be drawn from the studies. As for these control
26
27 variables, managed and unmanaged portfolios can be distinguished by identifying the
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29 presence of tools-based practices such as the “partner selection protocol”, “joint business
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31 planning sessions”, “codified best practices”, “joint evaluations of alliances” or the existence
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33 of an “alliance department” (Heimeriks et al., 2009). Similarly, the presence of an “alliance
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35 manager” or “vice-president of alliance” may indicate the strategic orientation of the
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37 portfolio, although we know that there are companies that have these functions but no
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39 strategic objectives for their portfolio (Lavie and Singh, 2012). These control variables can of
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41 course be more easily measured when working with primary data, but even if the information
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43 is not provided by the companies themselves, researchers can find clues to those functions
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45 and positions. This operational difficulty is compensated by the greater reliability of the results
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47 obtained.
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56 The definition of alliance portfolio (Lavie, 2007) does not include any aspect relating to
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58 management, which is appropriate in our opinion, as it separates the firm’s cooperative
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3 strategy from its alliance organization, and facilitates empirical research on the relationships
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5 between portfolio, strategy, organization and performance. The proposed classification helps
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7 to fully develop the original sense of the term alliance portfolio: the deliberate management,
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9 to a greater or lesser degree, of the set of alliances that a company has established (Wassmer
10
11 and Dussauge, 2012). A similar analysis is found in studies of corporate diversification. Most
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13 research into the topic does not take account of the type of management that companies
14
15 apply to their business portfolio. However, the distinction between corporate rationales –in
16
17 terms of the management of their business portfolios– has been of considerable use in
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19 developing new studies and for business practice, making the distinction between portfolio
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21 manager, synergy manager and parental developer (Johnson et al., 2008).
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30 Managerial implications

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34 From a practical or managerial point of view, there are two main implications. First, not all
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36 firms need the same kind of alliance portfolio, since this depends on the number of alliances
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38 and the importance that a company places on them. The distinction between portfolio types
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40 is based on a series of resources that the company needs to dedicate to the management and
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42 possible strategic development of its portfolio. The company must therefore evaluate
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44 whether deploying more resources to manage its alliance portfolio is appropriate or will be
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46 economically compensated (Heimeriks et al., 2009; Heimeriks, 2010). Similarly, the distinction
47
48 between types of portfolio may depend on the context of the company: there is a greater
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50 need for alliance management “in environments characterized by dense alliance networks”,
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52 while it is less critical “in highly competitive environments where alliances are rare” (Lavie,
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60 2006 p. 652).

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3 A second practical consequence stems from the relationship between the different types of
4 portfolio, since the change from one to another involves the introduction of new management
5 and strategic elements. The classification is intended to guide managers towards creating high
6 performing alliance portfolios (Ozcan and Eisenhardt, 2009) The proposed classification could
7 therefore improve the management of an alliance portfolio by company managers, since most
8 managers do not know what type of alliance portfolio they have, what type of portfolio they
9 should have and whether it supports their firm's strategy (Bamford and Ernst, 2002).
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23 Directions for future research

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27 The proposed classification, in conjunction with the literature review, indicates some of the
28 most promising avenues of research into the study of alliance portfolios. A first line of research
29 should investigate the three types of portfolio that have been identified and analyze the
30 appropriate portfolio, according to the type of company and its environment (Lavie, 2006).
31 Previous studies appear to indicate a preference for strategic alliance portfolios, but this is
32 unlikely to be the right choice for all companies (Hoffman, 2007).
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42 A second line of research might analyze the relationship between portfolio strategy and the
43 evolution and types of alliance portfolio, following the path forged by the works that have
44 explored their evolution (Capaldo, 2007; Dittrich et al., 2007, Lavie and Singh, 2012). The study
45 of the relationship between firm strategy, alliance portfolio and the environment would bring
46 greater theoretical consistency to evolutionary studies and would enhance our understanding
47 of the co-evolution of these variables (Hoffman, 2007; Ozcan and Eisenhardt, 2009).
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56 A last line of research should focus on the alliance function and its relationship with the
57 alliance portfolio. While there are a number of different studies on the alliance function
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(Heimeriks et al., 2009; Kale et al., 2001; Kale et al., 2002), it seems appropriate to continue analyzing its functions, structure and composition and its hierarchical position and relationship with the firm strategy. It might also be interesting to investigate the role of the alliance function in the effective management and development of the managed alliance portfolio typology.

The main purpose of this paper is to stimulate and contribute to a debate on alliance portfolios that will consolidate this important research stream and provide coherence and consistency to the many works that have been published in recent years. The development of this debate is certain to enrich the concept and improve and enhance its use in research and practice.

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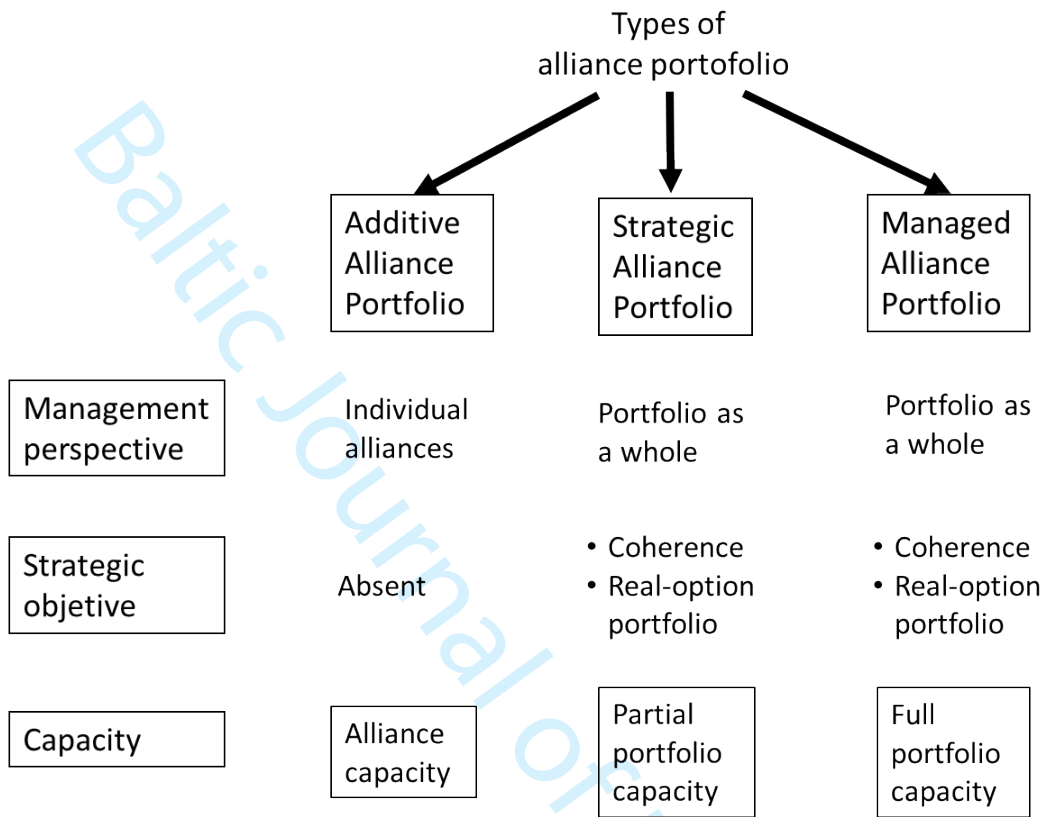
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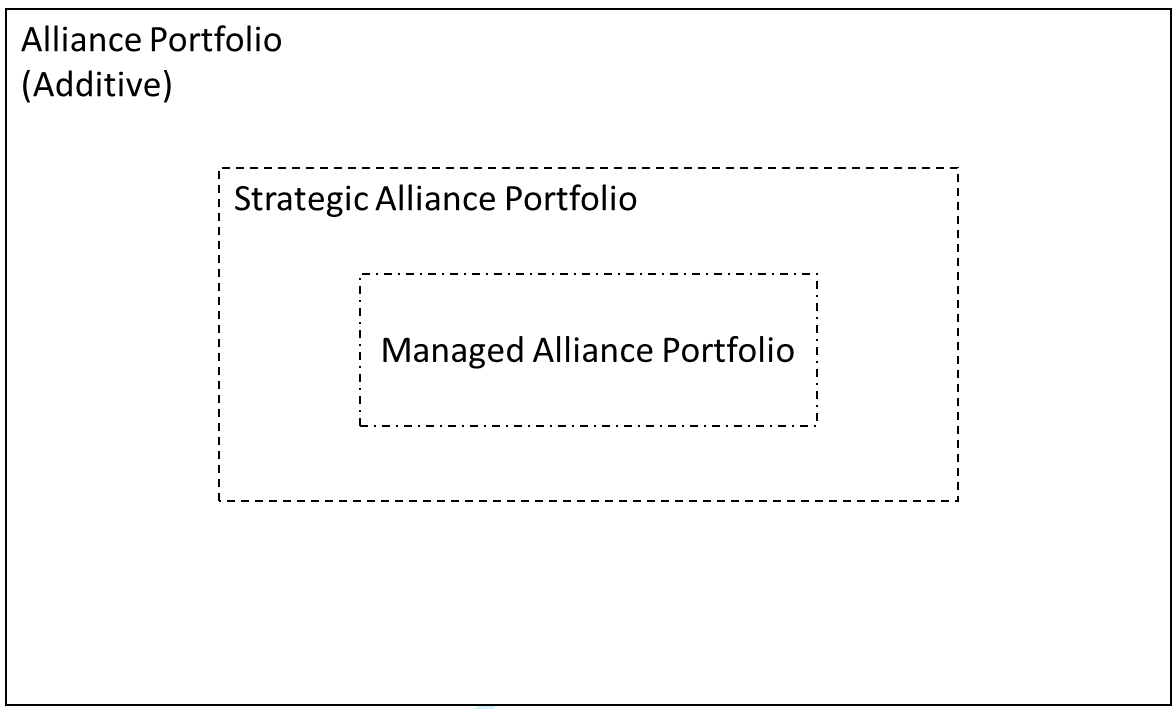
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Figure 1. Main ideas and concepts used in portfolio classification



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Figure 2. Types of alliance portfolio



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Figure 3. Alliance portfolio evolution

