Measuring the impact of organizational complexity, planning and control on strategic alliances' performance

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Abstract

Purpose – *The purpose of this paper is to analyze three characteristics of strategic alliances in Italy to estimate their influence on financial performance. The authors test how alliance complexity, strategic planning and accounting control influence revenue growth, asset growth and EBITDA margin.*

Design/methodology/approach – *This paper uses contractual and financial data to test hypothesized relationships in structural equation modelling (SEM) using partial least squares (PLSs).*

Findings – *This paper highlights that the extent of strategic planning positively influences the growth in assets but not in revenue or EBITDA margin. In addition, the findings of this paper support the idea that the complexity in the alliance is significantly related to the quantity of accounting controls within alliance.*

Originality/value – *This paper improves existing research on the subject, as it contributes to open the black box of alliances' internal operations by examining the details of 50 Italian contracts to create a multidimensional profile of each alliance.*

Keywords *Strategic alliance, SMEs, Organizational complexity, Planning, Accounting control, Alliance performance*

Paper type *Research paper*

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1. Introduction

The strategic alliances of small and medium enterprises (SMEs) is prevalent (Gronum *et al.*, 2012), distinctive (Darbi and Knott, 2016) and yet still not fully understood by researchers or practitioners. For decades, literature has highlighted the important role that strategic alliances (Donkels and Lambrecht, 1995; Hoffmann and Schlosser, 2001; Street and Cameron, 2007; Macpherson and Holt, 2007; Parker, 2008) and collaborative behavior (Flanagan *et al.*, 2018) can have for SMEs. The growing environmental turbulence and the globalization of most industries require small companies to face complexity (Jackson and Cardoni, 2017), mitigate risks (Shannon *et al.*, 2014), maximize investments (Ricciardi *et al.*, 2014) and constantly search for growth opportunities (Obeng, 2019). The literature demonstrates how cooperative strategies can constitute a high-impact solution for SMEs to overcome some of the most recurrent strategic limitations, creating agility (Bengtsson and Johansson, 2012), innovation (Taticchi *et al.*, 2012) and fostering knowledge acquisition and learning (Van Gils and Zwart, 2004).

The issue is extremely relevant, as the SMEs continue to be a key component of the economy in terms of value creation and employment (OECD, 2017; Eurostat, 2015). For this reason, governments have promoted on several occasions the development of strategic alliance of SMEs. An interesting case is represented by the Danish Network Program launched in 1980s to stimulate inter-organizational cooperation among existing small companies (Neergaard and Ulhoi, 2006). The effects of the program were deeply

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investigated (Cooke, 2002), and the conclusion was that the project had not generated the expected results: hardly any of the established networks survived the program (Viemose and Viemose, 1996).

A similar initiative was launched by the Italian Government with the law n. 122/2010 that defines a legal framework to formalize the implementation of cooperation strategy especially designed for SMEs (Cafaggi, 2009) through a contract. The law was designed to encourage a wide variety of collaborations, both in terms of vertical and horizontal alliance. In strategic management terminology, the law was intended to help SMEs form alliances within their industries (horizontal) and with companies along their supply chains (vertical). The formal scheme requires the partners to explicitly define some specific characteristics of the collaboration that are consistent with the concept of a strategic network (Jarrillo, 1988; Gulati, 2007), considered as an intentional, long-term alliance enabling different companies to acquire or defend the competitive advantage against competitors outside the network.

Because of the law, a variety of networks were formalized with a contractual scheme that discloses the details of the decisions underlying each network or alliance. Specifically, some characteristics of organizational design and strategy can be analyzed to understand how alliance performance is impacted by alliance complexity, strategic planning and control.

This paper analyzes these organizational features and presents two empirical studies based on a unique data set of alliances formalized in Italy during the first year of implementation. These themes have rarely been developed in the extant literature on strategic alliances, and in the majority of the existing research, it happened through qualitative analysis. Despite the steady attention from academics, the reasons for the success of strategic alliances remains weakly understood. Empirical testing of theories of strategic alliances has remained a popular topic in management journals. Ferreira et al. (2014) examined the content of 31 international management journals over a 20-year period, from 1993 to 2012. In the first year of the study (1993), only 15 articles were published on strategic alliances (1.8% of the total number of publications in the 31 journals). By 2012, 70 articles were published on strategic alliances, which was 8.2% of the articles published that year. Their study indicates a large increase in the volume of articles and in the *proportion* of articles dedicated to understanding strategic alliances. However, in spite of this practical and scholarly attention over the past twenty years, the success rate of strategic alliances continues to be surprisingly low. In fact, many academic studies have reported a success rate of below 50% (Schilke and Goerzen, 2010).

The paper introduces some novelty to the extant research on strategic alliances for SMEs. The focus is on SMEs intended as a dynamic and flexible form of enterprise, qualified by simple governance structures, with the prevalence of informal and personal mechanisms conditioned by the central figure of the entrepreneur (Mintzberg, 1983).

Based on recent calls for greater sophistication in strategic alliance research, this paper creates three novel contributions to the existing research. First, according to Albers et al. (2016), only relatively few studies have opened the black box of alliances' internal operations. As a result, alliances often appear as vacuous, abstract strategic vehicles – deals without organizational or structural substance. For this research, we gained access to the contracts that governed 50 strategic alliances in Italy and fully examined the details of all the contracts to create a multidimensional profile of each alliance. While many researchers have measured intentions, behaviors and motives of strategic alliance partners, this research is unusual because it used the contractual agreements that governed the alliance partners and inferred some organizational design features. Particularly, by studying the contracts, it was possible to estimate the amount and sophistication of the strategic planning that was instituted into each of the strategic alliances. For example, the research looked for evidence that the alliance partners considered external influences (competitors,

laws, economic trends, etc.) and internal factors (core competencies, personnel, etc.) in the design of the alliance and whether they had goals and measurable objectives to track performance. While this method does not allow us to fully open the "black box" of strategic alliances, it does provide the opportunity to look inside the box to study contracts that govern the partners in 50 alliances.

Second, this research reflects the recognition that the highly complicated nature of strategic alliances requires complicated modelling. Recently, Haans and Pieters (2016) noted that as the field of strategic management has progressed, developing and testing hypotheses that go beyond simple linear relationships has been high on the agenda of many strategy scholars. In fact, there are already some scholars testing for quadratic relationships in their research on strategic alliances.

Third, the data set includes longitudinal data on the performance of the alliances. Other studies have included data from multiple years of alliances, but our data set is unusual because it includes multiple years of financial performance of companies in the alliances, rather than subjective measures of performance, such as the partners' satisfaction with the alliance or partners' willingness to engage in future alliance behaviors. Many longitudinal studies of strategic alliances rely on "literature-based alliance counting" (Dodourova, 2009), which identify alliances announced in the media or in data sets collected by trade associations. These secondary sources of data allow for large sample sizes but often focus only on large companies that attract media attention.

The paper is structured as follows. The next section summarizes the literature and develops the research hypotheses. Section 3 outlines the data sources and methodology adopted. Section 4 presents the results of the statistical analyses. Finally, Section 5 discusses the findings and outlines the main conclusions and research implications.

2. Literature review and development of hypotheses

2.1 Strategic alliances, complexity and performance

The literature on strategic alliances has developed mainly two main research streams (Hoang and Antoncic, 2003): the analysis of the main factors influencing the alliance formation (Jack, 2010) and the study of the impact of alliance on performance.

There have been a multitude of academic approaches for trying to explain the performance differences between strategic alliances. Prominent academic work has examined partners' abilities to leverage pooled resources (Luo, 2008), the exchange of social capital and experience between partners (Gulati et al., 2009; Obeng, 2019), the partners' pursuit of innovation (Fang, 2011) and the process of partner selection when creating an alliance (Shah and Swaminathan, 2008). These studies have been referred to a broad range of organizational contexts, not only varying from the business entities operating in the traditional and/or innovative sectors but also suitable for the analysis of collaboration determinants and performance in particular settings (Lombardi et al., 2020a; Trequattrini et al., 2015; Lombardi et al., 2014).

It is then possible to distinguish between two complimentary streams of research:

1. Studies that examine pre-alliance formation determinants: This research typically considers the variables pertaining to the preparation of the alliance and particularly related to prior experience between partners (Larson, 1992; Saxton, 1997; Das and Teng, 1998), partner reputation (Granovetter, 1985; Burt and Knez's, 1996) and learning potential (Doz, 1996; Inpken, 1996).

2. Studies that examine post-alliance formation factors: This research is focused on topics like collaborative know how (Dyer and Nobeoka, 2000), trust (Das and Teng, 1997) and cultural distance (Shenkar, 2001).

Rarely has existing literature studied the impact of the organizational design on performance. The organizational design is a very relevant aspect of strategic alliance that creates a synthesis between the pre-alliance and post-alliance formation determinants. The present paper studies the impact of strategic alliance organizational design on performance, particularly referring to strategy planning and managerial control. Specifically, we are focused on several aspects of the complexity of the alliance: the number of partners, the number of industries represented in the alliance and the physical distance between the alliance partners.

As recently demonstrated by Jackson and Cardoni (2017), the design of networks and alliances can follow the law of requisite variety (Ashby, 1956). According to this perspective, organizations respond to increasing complexity in their environment by building additional complexity into their organizational structures. Pursuing a strategic alliance is one way for a firm to increase its complexity to match its environment. By adding complexity into its strategy and structure via strategic alliances, an organization can more quickly acquire important resources and gather information about competitive threats. At the same time, as an organization becomes more complex, it can experience difficulties of coordination that can reduce the positive impact of new resources and synergies on performance. The concept of diminishing marginal returns explains the mechanism for why increasing alliance complexity is only valuable up to a certain point. Jones (2003) used a similar argument to explain the n-shaped relationship between product development rates and firm performance. High rates of product development help a firm perform better, but only up to a point. Beyond point, when the rate of product development is too high, extra costs occur because of errors and coordination efforts to such an extent that firm performance declines.

The more partners in an alliance, the more opportunity for sharing and leveraging resources for each partner. A larger alliance has more pooled resources and capabilities than a smaller alliance. Consequently, a larger alliance has the potential to deliver more knowledge to each partner. Lombardi et al. (2020a) and Trequattrini et al. (2015) demonstrated that the effectiveness of the knowledge transfer can be limited or enhanced by many features of the alliance and the partners. But in principle, more alliance partners give each partner a larger pool of knowledge from which to draw. However, as the number of partners in an alliance grows, there are increasing coordination costs, risk of resource appropriation and opportunity for social loafing. Consequently, at some point, adding an additional member to an alliance might become counterproductive: the additional costs would outweigh the benefits.

Similar logic applies to the number of industries represented in the alliance. If all the alliance partners had expertise in the same industry, their collective expertise would be narrower than in an alliance composed of companies from multiple industries. Interacting with companies from other industries brings exposure to new suppliers, innovations and organizational routines. Dissimilar partners can also create benefits because of their other network ties (Luo and Deng, 2009). However, "the formation of alliances between partners from different industries and knowledge domains entails quite different challenges to those involved in forming alliances between partners of the same industry" (Gassmann et al., 2010, p. 642). While it is an attractive promise to have access to a wide range of partner knowledge, we expect there to be diminishing returns to alliance performance as more industries are represented in the alliance.

Third, geographic distance between partners should also be expected to provide novelty to the alliance but simultaneously increase the coordination costs in the alliance. Albers et al. (2016) described the need for researchers to consider industry and geographic complexity in strategic alliance. Because of modern communication systems, distance probably matters less than two decades ago. However, distance can be a good proxy to represent cultural differences between alliance partners. The physical distance itself might not increase the costs of coordination and communication, but greater distances do suggest

that partners might face coordination costs because of linguistic, legal or cultural differences. Even within Italy, there are dialect differences between the north and the south and evidence of difference in power distance and individualism.

All three of these factors (number of partners, number of industries and geographic distance) contribute to the complexity of the strategic alliances. Having dissimilar partners in an alliance is helpful but creates trade-offs. These trade-offs in the complexity of the network lead us to hypothesize an n-shaped relationship between network complexity and performance. Luo and Deng (2009) already found an n-shaped relationship between innovativeness in alliances and the number of similar partners in the alliance. Li et al. (2015) also tested hypotheses based on a quadratic relationship. They found that contextual distance (similar to the measure of geographic distance) between partners had an n-shaped relationship with alliance performance.

This paper formulates the hypotheses that a non-linear relationship exists between alliance performance and the three measures of alliance complexity (Figure 1).

Consequently, the first hypotheses are:

H1a. There is an n-shaped relationship between strategic alliance performance and number of firms in the alliance.

H1b. There is an n-shaped relationship between strategic alliance performance and number of industries represented in the alliance.

H1c. There is an n-shaped relationship between strategic alliance performance and the geographic distance between partners in the alliance.

2.2 Strategy and planning in strategic alliances of small and medium enterprises

A fundamental component of the alliance design is related to strategy formulation and planning, which continue to represent a very central topic, as demonstrated by a recent literature review on the strategic alliance research in leading management journals (Gomes et al., 2016). The authors highlighted a consistent and steady interest on the topic related to alliance management and the shape and design of alliances.

However, the role of strategic planning as a predictor of alliance performance has only rarely been investigated (Street and Cameron, 2007). Instead, research has usually focused on the issues of alliance portfolio strategies (Yamakawa et al., 2011), partner selection (Moeller, 2010) and strategic fit (Douma et al., 2000). Some studies have dealt with the topic of strategic planning with reference to SMEs (Cardoni et al., 2018) but have adopted a qualitative approach without measuring alliance or company performance.

With specific reference to the impact of strategy planning on performance, a relevant stream of international literature (Johanson and Lundberg, 2011) made an important

Figure 1 *N*-shaped relationship between the complexity and performance of strategic alliances
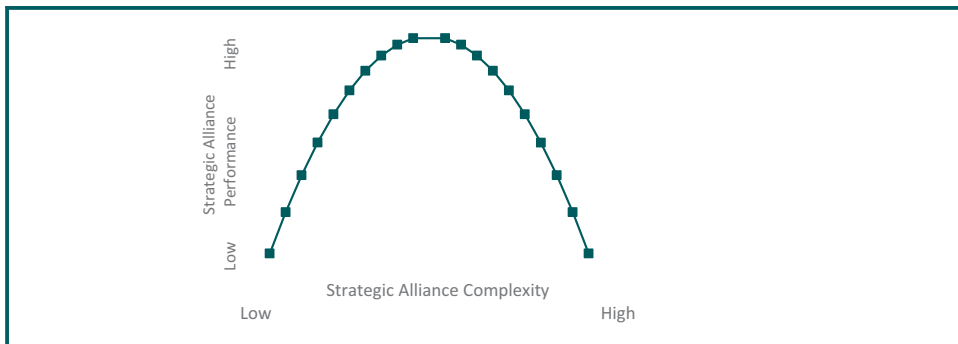
distinction between emergent and engineered cooperation, arguing that successful networking is characterized by an engineered process. Emergent collaborations represent interconnected groups of companies and geographically neighboring institutions, operating in a particular area and linked by elements of similarity and complementarity (Porter, 2010).

Engineered collaborations are formed by a group of partners who intentionally plan and develop interdependencies to create interactions and cooperation in their alliance. Strategic networks are planned and rationalized ex ante (Gulati, 2007; Jarrillo, 1988), analyzing the market and searching for possible partners with the skills and complementary resources necessary to face a particular threat or value a particular opportunity. Strategic networks base their collaboration on business and economic rationality and invest on relationships to increase business performances (Huggins, 2010). It follows that the collaboration agreements are specified in contracts written and executed through a formal organization with control systems.

The prior definition of strategic objectives is critical to communicate and share the project of collaboration, create the right commitment, set the framework for inter-organizational interactions and the criteria to distribute the value created and control the results. In this sense, strategic planning is considered a fundamental tool for building the basic forms of trust highlighted by Langfield-Smith (2008), such as goodwill trust and competence trust. Competence trust relates to a partner's ability to perform according to the specified agreement or contract (Nooteboom, 1996), while goodwill trust can be defined as perceptions of a partner's intention to perform in accordance with those agreements (Ring and Van de Ven, 1992; Nooteboom, 1996). Langfield-Smith (2008) demonstrated that a detailed plan in the start-up phase of the alliance served to provide assurance that the alliance members could work together as a team through the development of goodwill and competence trust.

Referring to SMEs networks, collaborative strategic planning is even more important to bridge the gap of their limited resources (Gronum et al., 2012; Darbi and Knott, 2016) and design a sustainable project with managerial competencies that small businesses rarely have. Not surprisingly, the network agreement framework established in Italy to promote the small business alliances requires the formal definition of the strategic objectives, the action plan and the performance measures, all elements whose correct definition requires an analysis and strategic planning (Cardoni, 2012). Moreover, the strategic formulation in SMEs is complicated by the corporate vision of the entrepreneurs, which can assume multiple identities that are never perfectly fitting to the individual company. Recently, Lombardi et al. (2020b) provided evidence that SMEs are heavily influenced by the characteristics and values of their entrepreneurial leaders. That case study provides clear results that the principles of strategy formulation should be a reliable predictor of alliance performance. Unlike the prevailing strategic approach on business networks, focusing on the benefits and risks for the individual company joining a network system (Gulati et al., 2009), the process of strategic formation adopted is based on the construct of strategic vision (Gluck, 1984) and strategic mapping (Ackermann and Eden, 2011).

As a result, if the role of strategy formulation and formal planning in SMEs is still debated (Greene and Hopp, 2017; Watson and McGowan, 2019), then in the strategic alliance for SMEs, it can serve as a tool for defining relationships and consolidating the partners' vision and mission, as well as consolidating goodwill trust and competence trust. Indeed, in a logic of learning and learning organization, formal planning makes it possible to transform the tacit knowledge of the partners into explicit knowledge and development from the integration of this collaborative knowledge (Van Gils and Zwart, 2004). In these situations, strategic frameworks and tools should be implemented in a flexible, informal, organic, interactive ways to facilitate communication and the transformation of knowledge into innovative strategies (Chenhall, 2003). The appropriate selection of the tools, the importance to attribute to each component and the overall coherence to ensure the right

balance between deliberate and emergent strategy will then depend on the characteristics of the business entity in terms of industry, management and environment (Cardoni *et al.*, 2018).

The organizational design of strategic alliances could be then a predictor of future alliance performance. It is then expected that alliances informed by strategic management principles will outperform other alliances. This logic leads to the next hypothesis:

> *H2.* The sophistication of strategic planning of an alliance contract positively influences its future performance.

2.3 Accounting and management control in strategic alliances of small and medium enterprises

In the research on accounting and management control for strategic networks, new paradigms began to emerge in the mid-1990s. Many important scholars (Otley *et al.*, 1995; Hopwood, 1996; Shields, 1997) emphasized the importance of extending the domain of accounting across the traditional boundaries and encouraged accounting scholars to focus on inter-organizational relationships. Many scholars responded to these calls, resulting in a growing body of literature (Hakansson *et al.*, 2010), mainly framed on a transaction costs perspective and an institutional theory perspective.

In the transaction costs literature, various roles have been identified for management accounting in inter-firm settings that relates to specific accounting techniques and different uses of accounting information. These roles include the use of financial and non-financial information in the "make or buy or ally" decisions, in the selection of a potential partner, during the management of cooperation and in the monitoring and evaluation of collaborations activities (Seal *et al.*, 1999; Caglio and Ditillo, 2008). These studies often examined inter-firm accounting in conjunction with the issue of motivation and incentives underscoring the importance of studying accounting in a broader control context (Anderson and Dekker, 2010).

In the institutional theory perspective, cost management and other accounting routines could become a part of the broader institutional context (Coad and Cullen, 2006) which helps to give order to the complexity created by the diverse institutional pressures that influence the nature and character of inter-organizational relationships. In the works of Greenwood *et al.* (2002) and Parkhe (2003), the research explores the evolutionary process of development in management accounting and control. The field has now begun to consider the interaction between micro and meso institutions in industries and the broader macro and meta institutions that govern the regulations in which the relationship is set. According to Parkhe (2003), it is important to recognize the meta and macro institutions when studying inter-organizational relationships in different countries: economies with different socio-legal systems are likely to have substantially different approaches to accounting for inter-organizational relationships – influenced in large part by their institutional environments.

Inside these different streams, international literature demonstrates that a broad range of special accounting techniques, methods and control mechanisms have been developed with the purpose of handling accounting and control problems related to business relationships: open-book accounting, target costing, value chain accounting, quality plans, programs of innovation, alliance boards, joint task groups, tournament procedures, supplier certifications, non-financial measures and risk-rewards schemes (Mouritsen *et al.*, 2001; Langfield-Smith and Smith, 2003; Dekker, 2003; Dekker, 2004; Seal *et al.*, 1999) and the specific application of balanced scorecard (Kaplan *et al.*, 2010). These methods influence the motivation and incentives of strategic partners and should be analyzed in the broader institutional context.

In the above-mentioned studies, the analysis of relationship between management control setting and performance has been predominantly performed through qualitative methodologies, while this research aims to use a quantitative approach.

The concept of control in strategic alliances has been used as a predictor of future performance. However, the notion of control has varied widely among published studies. Geringer and Hebert (1989) defined control as one partner's willingness and ability to influence to varying degrees the behavior and output of another entity. Mamavi et al. (2015) used a similar conception of control that measured whether one alliance partner was postured as the most controlling member of the alliance. They found that partners with higher levels of control had better alliance management capabilities. The adopted notion of control addresses the extent of consensual control that the partners have designed into the alliance. Rather than focusing on whether one partner controls the other(s), this research is interested in the extent to which the partners used traditional accounting concepts to build control mechanisms into the alliance contract. Reliance on accounting concepts to govern the alliance indicates that the partners have invested time to develop the accounting measures and then agreed on what standard to set for themselves. These control mechanisms often lead to other forms of accountability too, such as agreements to engage in specified behavior, develop processes, make resource contributions or share intellectual property. Consensual control should create more trust, less gamesmanship and better alliance performance. Accordingly, *H3* is based on this logic:
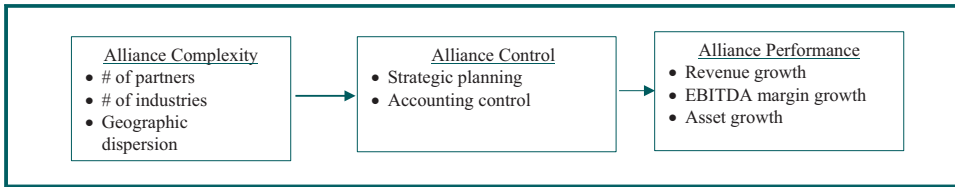
H3. The sophistication of accounting control of a strategic alliance positively influences its future performance.

2.4 Interaction between complexity, control and performance in strategic alliances of small and medium enterprises

Strategic alliance partners realize the inherent complexity in their alliances, so they create contracts commensurate with that complexity. In other words, the more difficult the goals or the relationships between partners, the more complex will be the strategic alliance. For example, an alliance between two local companies to jointly distribute a product will likely be governed by a very simple contract, relative to an alliance among many companies from different industries to jointly develop a new drug compound. It is known that alliance partners tend to choose each other to build some diversity into their strategies. The wisdom of dissimilar partners can be explained by the resource-based view of the firm and by an organizational learning perspective (Luo and Deng, 2009). To realize the benefits of diversity in strategic alliances, the alliance partners will devise contracts with a level of complexity commensurate with the diversity in the alliance. Douma et al. (2000) identified six indicators of strategic fit between alliance partners including the following: "Are the partners' alliance and corporate strategies compatible?" and "Is the alliance of strategic importance to both partners?" These are questions that they use to indicate the degree of fitness between alliance partners. Even without asking these specific questions, alliance partners will recognize that diversity and complexity within the alliance (i.e. low levels of strategic fit) will require higher levels of control in the alliance contracts to regulate members' behaviors. When the alliance contract is designed with controls that are commensurate with the diversity in the alliance, it is possible to expect strong alignment between partners' behaviors and, consequently, strong alliance performance. In alliances where there is a mismatch between alliance complexity and alliance contract control, a lower performance is expected. This goodness-of-fit logic suggests a mediated relationship between alliance complexity and alliance performance. Figure 2 is an illustration of the proposed relationships.

With more complex alliance (e.g. more geographic dispersion between partners), higher levels of control will be required to govern the alliance to create high financial

Figure 2 Hypothetical structural equation model

Alliance Complexity
- # of partners
- # of industries
- Geographic dispersion

Alliance Control
- Strategic planning
- Accounting control

Alliance Performance
- Revenue growth
- EBITDA margin growth
- Asset growth

performance in the alliance. Using the same variables as in the previous approach, the new hypotheses are:

H4. Alliance complexity is significantly related to the quantity of alliance control, which is significantly related to alliance performance.

H4a. The more complex the strategic alliance, more sophisticated accounting control is required to create high financial performance.

H4b. The more complex the strategic alliance, more sophisticated strategic planning control is required to create high financial performance.

3. Sample, data and methodology

To test the hypotheses, we gained access to the contracts that governed 50 strategic alliances in Italy considering that these data were publicly available under the Italian law n. 122/2010. The alliances were formed in 2010 among 285 companies. The 50 alliances were formed from companies all headquartered in Italy, from a variety of industries and locations. This research acquired the contracts of all 50 alliances and fully examined the details to determine three important characteristics of each alliance. While many researchers have measured the motives, behaviors and decisions of strategic alliance partners, this research is unusual because the original design of each alliance in the sample was carefully examined. First, by studying the contracts, it was possible to estimate the amount and sophistication of the strategic planning that was woven into each of the strategic alliances. For example, the research looked for evidence that the alliance partners considered external and internal factors in the design of the alliance and whether they had goals and measurable objectives to track performance. The aim was to understand the extent to which the designs of the alliances conformed to the traditional methods of strategic management. As expected, some alliances were formed with very basic attempts at strategic planning. The documents that governed the simplest alliances were short, simple and lacking in sophisticated appreciation for competitive strategy. The shortest contract was only five pages long and did not specify clear roles for each partner to fulfill or goals for the alliance to achieve. In the examination of the contracts, the research also looked for evidence that the partners engaged in other kinds of typical strategic thinking, like analysis of the external environment, pursuit of synergy among the partners' resources and integration of value chain competencies. Based on these and other activities traditional to the strategic management of alliances, a score (range: 0-7) was assigned to each strategic alliance to represent its sophistication in strategic planning. This score was used as an independent variable.

A second independent variable estimated the level of accounting control that the partners designed into their alliances. In past research on alliances, both process control and outcome control have typically been measured by asking managers to answer Likert scale questions about how much control they were able to exert in a strategic alliance (Nakos and Brouthers, 2008) or by determining the extent to which one partner exerted control over another (Mamavi *et al.*, 2015). As with the first independent variable (strategic planning sophistication), we thoroughly examined the contracts to estimate the amount of control in

the strategic alliances, searching for the degree to which the partners followed typical managerial and financial accounting standards in the alliance contract. Precise methods of control are expected to guide partners' behavior, reduce gamesmanship and build trust within an alliance. Each alliance was scored (range: 0-7) according to how thoroughly it adopted and conformed to typical methods of accounting.

Third, this research measured the complexity of the alliances in three ways. First, by using the two-digit ATECO code for each company, the number of industries represented in each alliance was counted. For example, if all the companies in the alliance were in the same industry, then the industry diversity score was one. Conversely, some alliances were composed of companies in many industries. This measure is similar to the one used by Parida et al. (2016) that estimated partner diversity by also considering the number of industries represented in an alliance. A second measure of alliance complexity simply counted the number of companies in the alliance. In this measure, the idea is that coordinating and planning the roles of many partners results in a more complex alliance than when the alliance contains only two partners. Third, a measurement of geographic dispersion in each alliance has been performed. Although all the alliance partners were located in Italy, it is recognized that:

■ Longstanding regional differences exist within Italy that influence business practices.

■ The geographic shape of Italy can create large physical distances between partners.

In some alliances, all the partners were in the same city, which suggests it would be easy to schedule face-to-face meetings and there would be little differences in regional business norms. In contrast, in other alliances, partners were separated by more than 700 km. In those alliances, geographic dispersion would have increased the alliance complexity.

The dependent variables were based on traditional accounting measures of organizational performance for the years 2008–2013, specifically total assets, total revenue and EBITDA margin. We chose these measures for our dependent variables because they are three very traditional ways to measure organizational performance, not only in strategic management research but also in research addressing strategic alliance performance (Luo, 2008; Parida et al., 2016). Ideally, we could have chosen measures that reflect the motives underlying these 50 strategic alliances. For example, if all the alliances were formed to enhance R&D skills, then we could have chosen a dependent variable to reflect that particular motive. In our sample, we do not know why the alliances were formed, so we used pre- and post-test general measures of organizational performance. Because we had access to longitudinal data, we calculated the average of each firm in each alliance on each measure for 2008-2009 and again for 2012-2013. In this way, it was possible to compare the average performance of the alliance partners two years before the alliance was formed to the average performance of the alliance partners two years after formation. Considering that the alliances were formed in 2010, data from 2010 and 2011 were omitted. It is reasonably assumed that the impact of an alliance on the organization's accounting performance can be slow, so the research focused on the second and third years after the alliance formation.

Smart PLS was used to test the hypotheses in the structural equation model. To test the model, six separate analyses were performed. Specifically, it was tested whether the alignment between accounting control and alliance complexity lead to higher performance in the three measures of financial performance: growth in in alliance revenue, growth in alliance assets and growth in alliance EBITDA margin. These analyses provided the results of testing H4a. Then the analyses were performed three more times, using strategic planning control as the mediating variable to test H4b (Table 1).

Table 1	H4		
Hypothesis	Independent variables (alliance complexity)	Second stage variable (sophistication of control)	Dependent variable
4a	• Number of alliance partners • Geographic dispersion • Number of industries	Accounting control	Δ Revenue Δ EBITA margin Δ Assets
4b	• Number of alliance partners • Geographic dispersion •Number of industries	Strategic planning control	Δ Revenue Δ EBITA margin Δ Assets

3.1 Theoretical model

The statistical analysis method chosen to test the hypotheses in this study is the structural equation modelling (SEM) using partial least squares (PLSs) in the software SmartPLS. This model describes the relationships or paths among theoretical constructs. PLS recognizes two components of model building: the measurement model and the structural model.

The measurement model consists of relationship between the construct and the items used to measure them. It implies the examination of the convergent and discriminant validity of the research instrument, which indicates the strength of the measures used to test the proposed model.

The structural model assesses the explanatory power of the independent variables and examines the size and the significance of a path coefficients. Together, the measurement and the structural models form a network of measures and construct.

Regarding statistical specification, PLS is a covariance-based multivariate method that is preferable when the rigorous assumptions of variance-based methods (e.g. LISREL) may not apply. Specifically, PLS is not sensitive to non-normally distributed data and involves no assumptions about the population or scale of measurement (Fornell and Bookstein, 1982). Our data set contains nominal, ordinal and interval levels of measure. Furthermore, some of the measures are not normally distributed because of the huge variance in results (e.g. geographic dispersion between alliance partners).

4. Results

Descriptive statistics and the correlation matrix appear in Table 2.

The first hypothesis predicted an n-shaped relationship between alliance complexity and future alliance performance, testing for the parabolic relationship in the presence of the

Table 2	Descriptive statistics									
Variable	Mean	Variance	SPC	ACC	No. of partners	Geographic dispersion	No. of industries	%Δ Assets	%Δ Revenue	Δ Margin
Strategic planning complexity (SPC)	3.5	2.40	1.00							
Accounting control complexity (ACC)	4.3	2.88	0.46	1.00						
Number of partners	8.7	30.14	−0.06	−0.10	1.00					
Avg geographic dispersion (meters)	1,027	18.50	0.08	0.08	−0.08	1.00				
Number of industries	4.5	13.25	−0.14	0.00	0.69	−0.12	1.00			
%Δ Assets	41.7%	0.40	0.16	0.14	−0.11	0.01	−0.08	1.00		
%Δ Revenue	15.3%	0.31	0.07	0.10	−0.04	−0.01	−0.05	−0.06	1.00	
Δ EBITDA Margin	−2.4%	0.06	0.07	−0.04	−0.02	−0.08	−0.07	−0.02	0.08	1.00

main effects of strategic planning and accounting control. Results showed only meager support for the proposed relationship. In one of the nine analyses, the measure of complexity (number of partners) was found to have a significant non-linear relationship with percentage change in assets ($p < 0.05$). In the eight other models that tested for a non-linear relationship between alliance complexity and future performance, p-values were not significant. *H2* predicted that the extent of strategic planning described in alliance contracts would be positively associated with future alliance performance. The relationship between the extent of strategic planning and three different dependent variables were tested: percentage change in partners' assets, revenue and EBITDA margin. The results of the hypothesis testing were mixed (Table 3). The extent of strategic planning was found to be significantly associated with growth in assets but not with growth in revenue or EBITDA margin. The results for testing *H3* were also mixed. This research tested whether the extent of accounting control in the strategic alliance contracts was related to future alliance performance. While the same three dependent variables were considered, only one (percent change in revenue) was significantly predicted by the extent of accounting controls in the alliances.

In *H4a*, the first step of the model tested the relationship between alliance complexity and accounting control in the alliances. In all three equations, this research found strong support for the idea that the complexity in the alliance is significantly related to the quantity of accounting controls in the alliance contracts. Specifically, the greater the average physical distance among partners in the alliance, the more sophisticated were the accounting control mechanisms written in the alliance contracts. Second, the number of industries represented in the alliance was also significantly related to accounting control. Alliances containing companies from more industries tended to have more sophisticated accounting controls. The third relationship was also significant, but in the opposite direction of what was expected. The size of the alliance was negatively related to the level of accounting controls in the alliance. In other words, larger alliances tended to have lower levels of accounting controls written into the contracts.

The second stage of the model predicted that the level or amount of accounting control would influence the financial performance of the alliance members. It was believed that

Table 3 Results of hypothesis testing

Hypothesis	Original sample	Sample mean	SD	t-statistic	p-value	Decision
H1						
Strategic Planning → % Δ Revenue	0.096	0.09	0.107	0.898	0.37	Reject
Strategic Planning → % Δ Assets	0.189	0.217	0.068	2.79	0.006	Accept
Strategic Planning → Δ EBITDA margin	0.139	−0.025	0.16	0.872	0.384	Reject
H2						
Accounting Control → % Δ Revenue	0.14	0.169	0.064	2.199	0.028	Accept
Accounting Control → % Δ Assets	0.146	0.013	0.177	0.826	0.41	Reject
Accounting Control → Δ EBITDA margin	0.13	0.031	0.145	0.898	0.369	Reject
H3a						
(Number of Partners)^2 → % Δ Revenue	−0.037	−0.036	0.063	0.588	0.557	Reject
(Geographic Dispersion)^2 → % Δ Revenue	−0.015	−0.012	0.036	0.405	0.686	Reject
(Industry Diversity)^2 → % Δ Revenue	−0.081	−0.077	0.064	1.27	0.205	Reject
H3b						
(Number of Partners)^2 → % Δ Assets	0.127	0.125	0.047	2.706	0.007	Accept
(Geographic Dispersion)^2 → % Δ Assets	−0.037	−0.042	0.038	0.966	0.334	Reject
(Industry Diversity)^2 → % Δ Assets	0.042	0.035	0.058	0.722	0.471	Reject
H3c						
(Number of Partners)^2 → Δ EBITDA margin	−0.085	−0.107	0.053	1.59	0.112	Reject
(Geographic Dispersion)^2 → Δ EBITDA margin	−0.005	0	0.066	0.08	0.937	Reject
(Industry Diversity)^2 → Δ EBITDA margin	−0.026	−0.029	0.049	0.546	0.586	Reject

accounting controls written into the alliance contracts would guide the members' decisions and unify their efforts to excel. The results showed strong support for the hypothesis when it was measured per cent change in average revenue of the alliance members. Figure 3 shows the model with path coefficients and p-values for each relationship.

The results indicated in Figure 3 provide strong support for *H4a*. First, all three of the independent variables appear to influence the subsequent alliance contracts. Second, all three of independent variables have non-significant path coefficients with the dependent variable, revenue growth. This result is important because it tells us that the complexity of the alliance does not have a direct effect on alliance performance. Instead, alliance complexity affects the level of accounting control, which in turn does have a positive and significant on the alliance performance. The path between accounting control and average revenue growth was significant at $p < 0.05$.

In the other two equations for testing *H4a*, the per cent change in EBITDA margin and per cent change in assets as the dependent variables were used. In both equations, the first stage of the model showed significant relationships between alliance complexity and accounting control. But in both equations, there was a non-significant relationship between accounting control and alliance performance.

The other three equations were tested to determine if the complexity of the alliance influenced the degree of strategic planning control and whether strategic planning control impacted the alliances' financial performance (*H4b*). Unfortunately, none of the hypothesized relationships were supported by the data. The alliance complexity did not influence the level of strategic planning found in the alliance contracts, and planning did not seem to impact the financial performance of the companies in the alliance.

5. Discussion and conclusion

According to existing research on strategic alliances, it was expected that the efforts at conventional strategic planning and accounting methods were an important contributing

Figure 3 Structural equation model results
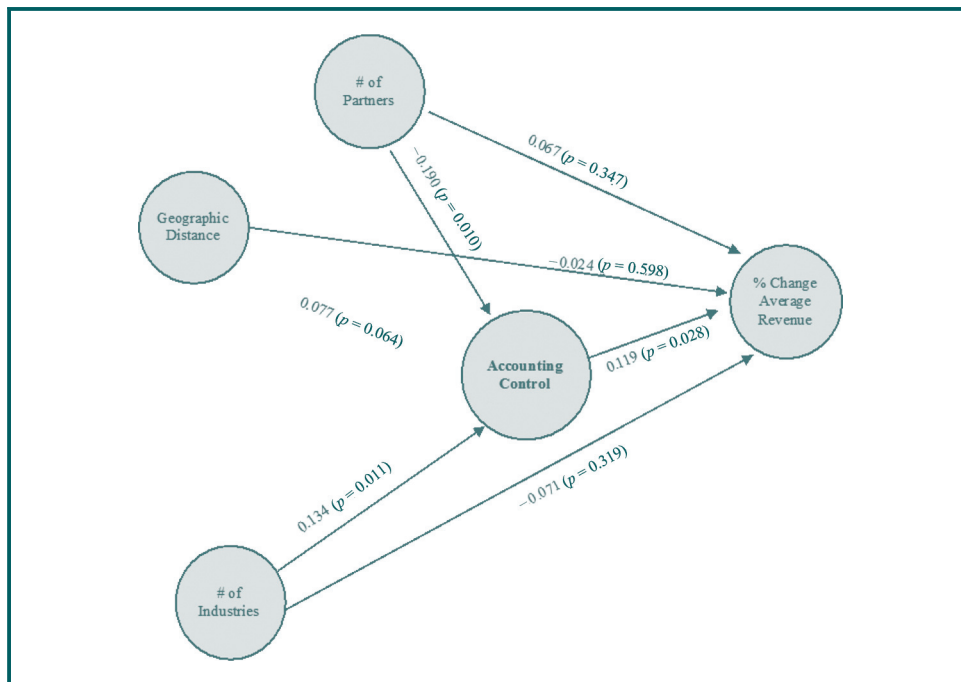
factor to the future performance of the alliances. By designing strategic alliances strategically and with rigorous accounting controls in place, alliance partners strive to design alliances to make themselves more competitive. By examining the contracts of the 50 Italian alliances in the sample, this research sought to distinguish the well-designed alliances from those that did not adhere to strategy and accounting norms. Furthermore, the paper tried to identify the types of complexity in strategic alliances that might be beneficial up to a point, but then create diminishing returns to the alliance's financial performance.

The results of this study show that some theoretical assumptions are not always valid in a context of alliances composed mainly of SMEs. As regards to *H1a*, *H1b* and *H1c*, as observed, findings showed only meager support for the proposed relationship. However, the non-confirmation of these hypotheses does not surprise us, as other studies conducted on the Italian strategic alliances have shown conflicting results. In some cases, some dimensions of network complexity, as number of partners and geographic distance, were negatively associated with alliances performance (Rubino and Vitolla, 2018). In other cases, research has shown contrary results (Cisi *et al.*, 2018). At the same time, it should be noted that the choice of different performance measures could conducted to different results as also highlighted in further research on the topic (Rubino *et al.*, 2019). Finally, we must acknowledge that quadratic relationships are difficult to find in social science research, especially in relative small sample size like ours ($n = 50$).

Considering *H2* and *H3*, contrary to our expectations, results were unsatisfactory considering that only for some dimensions of organizational performance, we found significant relationships. This unexpected result could be explained by the fact that both sophistication of strategic planning and accounting control are two important predictors of alliances performance. However, if at the basis of the alliance there is a distorted or poorly achievable goal, then planning and subsequent control activities cannot ensure the achievement of superior performance. On the contrary, the alliance could be a bankruptcy announced, as the target may not be feasible at the outset.

Possibly the most interesting result in the data is the range of financial performance in the 50 strategic alliances. Table 4 shows the highest, lowest and mean results of change in average financial performance from 2008 and 2009 to 2012 and 2013.

Within the 50 strategic alliances, there were some very strong financial results and some alliances that were probably considered to be failures. The variance in the performance data is important for both practical and scholarly reasons. For managers of companies interested in creating strategic alliances, the data confirms that the population of alliances is fraught with underperformance and even failure. The partners in the worst-performing alliance lost almost half their asset value and saw their revenue fall by more than 80%, while their margins fell by more than half. Furthermore, in the sample of 285 companies in the 50 alliances, 66 (23%) reported a decrease in average revenue after joining the alliance. Specifically, for those 66 companies, average revenue in 2012 and 2013 was lower than average revenue in 2008 and 2009. Furthermore, 41 of those 66 companies also had a lower EBITDA margin in the years after the alliance was formed. Maybe these companies earned some strategic or longer-term benefits from joining the alliance, but if so, then it seems like a risky trade-off to accept falling revenue and margins in the short term in exchange for gaining some unknown future benefits. The explanation could be a simpler

Table 4 Alliance performance				
Performance metric	*Highest growth alliance (%)*	*Lowest growth alliance (%)*	*Mean growth (%)*	*Median growth (%)*
Δ Assets	395	−49	42	25.4
Δ Revenue	343	−84	15	6.6
Δ EBITA margin	51	−228	−2.4	0

one: alliance partners tend to underestimate the complexity of designing and executing an effective alliance. The data indicate that some alliance partners show financial improvements within three years, but on the other hand, at least 25% show almost immediate decline in performance. This information highlights the riskiness in strategic alliances that should be useful for managers who are considering them.

For scholars working on future research, the hypothesis testing results are not too promising. The optimistic view is that there is big variance in the data. Even in a small sample of 285 companies in 50 alliances, Table 3 shows the huge variety of outcomes in alliance partners' performance. Table 1 reflects a similar result: some alliances were formed with 12 or 15 partners, but some alliances had only 2 or 3 partners. Some alliances were formed among companies in one region or one industry, but others were formed among companies spread across all of Italy in a variety of industries. Consequently, the data are rich and complex. The PLS analysis showed that the internal model had high error variance. In a sample of only 50 alliances, the error variance might have been too high to detect significant relationships, if they do exist. In addition, based on a more complex model of strategic alliance effectiveness, the results of a second data analysis were performed.

The results of this study help us understand:

- some of the factors that influence the design of strategic alliances; and

- whether the design has an impact on future financial performance of the alliance partners.

In the sample, there were some extremely complex alliances. For example, some alliances were composed of companies all in the same city. Such close proximity should make coordination and communication simple compared to alliances with members from all across Italy, because geographic proximity enables face-to-face communication, which is critical to transferring tacit knowledge (Ryu *et al.*, 2018). In contrast, some alliances contained members, none of which were in the same city. When the shortest distance between any dyad in an alliance is hundreds of miles, coordination is more difficult. The results of testing *H4a* indicate that the measures of alliance complexity (number of partners, number of industries and average distance between partners) does influence the sophistication or level of accounting control that alliance partners build into their alliance contracts. This result gives further credibility to the notion that the selection of alliance partners influences how the alliances are structured (Yayavaram *et al.*, 2018). As it was expected, the average distance between pairs of partners and the number of industries in the alliance were positively and significantly related to the quantity of accounting control in the alliance contracts. The third predictor variable (number of firms in the alliance) was also significantly related to accounting control, but the sign was negative in all the equations. In Figure 3, the path coefficient was -0.19 ($p = 0.01$). While this outcome is contrary to the expectations, it is not without precedent in the literature. Pouder and St. John (1996) believed that larger clusters of firms working together would create "congestion costs" so that the coordination costs and threat of knowledge leakage of large alliances would outweigh the benefits. Considering the extremes in the data, it might seem reasonable that larger alliances had less stringent accounting controls built into their contracts. The four largest alliances in the data set had 19, 18, 15 and 11 members. For the partners to create strict accounting controls for such large alliances would have been virtually impossible. This research view is that these large alliances were probably more similar to a loose confederation of companies rather than a formalized strategic alliance. If this characterization is accurate, then it is not surprising that the larger alliances had a significantly lower level of accounting controls.

The second stage of the model indicated that the level of accounting controls has a positive and significant effect on average revenue growth of alliance firms ($p = 0.028$), which provides some support for *H4b*. This is a key contribution of this research. The examination

of the 50 alliance contracts allowed us to understand the sophistication of the accounting control that governed each alliance. This paper searched for evidence that the alliances had established budgets, standardized cost accounting policies, pricing forecasts and pre-established reporting channels. The more the alliances adhered to these accounting standards, the higher was the average revenue growth for the companies in the alliance. This result is useful information for scholars and practitioners alike. First, there are more evidence that managers influence the results of strategic alliances. The decisions they make help while designing an alliance help create a governance structure that leads to better revenue growth. Second, for scholars, this research suggests that studying strategic intent of alliances is useful. Whereas most research on alliances has studied the partners' behaviors or actions, this research examined how the design of alliances impacted their future performance.

The failure to find support for *H4b* when testing for changes in total assets and EBITDA margin is not too surprising, given the data. Given that the motive for most alliances is learning new routines, gaining access to new markets, sharing costs or conducting joint research, it was not really expected a change in assets as an outcome of joining an alliance. A similar argument can be made for the expectation for changes in profit margins. It was expected that alliance members realize a change in margins if the sample contained a homogenous set of alliances that were designed to reduce or share costs, while maintaining prices. In that case, the best alliances would in fact experience increased margins, while the worst ones would see a deterioration in margins. In the sample, the average EBITDA margins declined from 5.4% in 2009 to 2.9% in 2013, which leads us to a discussion about the generalizability of our results.

Across the entire sample, average profit margins declined and average revenue showed meager growth during the time period of the study. This fact indicates that on average, the companies in our sample were not thriving. Italy's economy struggled to overcome the impact of the financial crisis of 2008. In fact, Italy's gross domestic product (GDP) growth rate was negative in 2009, grew about 2% in 2010, and began shrinking again in the fourth quarter of 2011 and for all of 2012 and 2013. Given this macroeconomic context, we believe it would have been difficult to discover factors that distinguish strong strategic alliances from weaker ones. This study has some theoretical and managerial implications. First, the results contribute to broadening the literature on the topic by stimulating the development of further research that seeks to analyze the phenomenon of alliances between SMEs, investigating the alliances organization and activities. An important result highlighted by this study is related to the mediation effect exercised by the level of accounting control in the relationship between alliance complexity and its performance. The alliance complexity does not have a direct effect on performance; however, it positively impacts on the level of accounting control that produces positive effects on alliances' performance.

As regards the managerial implication, this study suggests paying attention to the level of accounting control, which acts as an effective variable of mediation. Managers should activate effective mechanisms, which they can allow to influence to varying degrees, the behavior and output of the whole alliance. The monitoring of the results achieved and activities carried out would allow effective corrective mechanisms to be promptly adopted. Given the importance of the accounting control and of the strategic planning phase, firms could be including professional figures within the alliances having the role of facilitator or coordinator of the relationships established between SMEs (Rubino *et al.*, 2017).

Despite its theoretical and managerial implications, this study has also some limitations, which could stimulate further research. First, this research examined firms that joined an alliance in the first year of entry into force of Italian law. Thus, further research could be carried out on more recent alliances by observing if there are divergences between the years and differences between alliances specifically concerning some geographical areas of Italy or between the different industries. At the same time, future research could replicate

some hypotheses made in this study on a greater number of alliances to verify whether they are confirmed or not.

As regards the managerial implication, this study suggests that alliances performance can be better achieved where firms formulate a more articulated and effective strategic management process. Strategic planning and accounting control are two important aspects for the alliance's success (Rubino *et al.*, 2019), so that often a network facilitator or manager is provided within networks alliances. Attention must, thus, be paid to the first steps of an alliance. In addition, this paper highlights the role of the alliances diversity expressed by the number or the industries which firms belong. This is another aspect that has already been explored within the alliances in Italy but with conflicting results (Rubino and Vitolla, 2018). This study in this area provides greater clarity by demonstrating the existence of an inverse relationship between network complexity and performance levels when alliance reaches a specific dimension. Despite its theoretical and managerial implications, this study also has some limitations, which could give opportunities for further research. First, this research examined firms that joined an alliance in the first year of entry into force of Italian law. Thus, further research could be carried out on more recent alliances by observing if there are divergences between the years and differences between alliances specifically concerning some geographical areas of Italy or between the different industries.

References

Ackermann, F. and Eden, C. (2011), *Making Strategy: Mapping out Strategic Success*, Sage, London.

Albers, S., Wohlgezogen, F. and Zajac, F. (2016), "Strategic alliance structures: an organization design perspective", *Journal of Management*, Vol. 42 No. 3, pp. 582-614.

Anderson, S. and Dekker, H. (2010), "Accounting in networks. The transaction cost economics perspective", in Hakansson, H., Krauss, K. and Lind, J. (Eds), *Accounting in Networks*, Routledge, London.

Ashby, W.R. (1956), *Introduction to Cybernetics*, Chapman & Hall, London.

Bengtsson, M. and Johansson, M. (2012), "Managing coopetition to create opportunities for small firms", *International Small Business Journal: Researching Entrepreneurship*, Vol. 32 No. 4, pp. 401-427.

Burt, R.S. and Knez's, M. (1996), "Trust and third-party gossip", in Kramer, R.M. and Tyler, T.R. (Eds), *Trust in Organizations: Frontiers of Theory and Research*, Sage, Thousand Oaks, C.A., pp. 68.-69.

Cafaggi, F. (2009), "Il contratto di rete, Il mulino, bologna", *Economia E Diritto Del Terziario*, Vol. 1.

Caglio, A. and Ditillo, A. (2008), "A review and discussion of management control in inter-firm relationships: achievements and future directions", *Accounting, Organizations and Society*, Vol. 33 Nos 7/8, pp. 868-989.

Cardoni, A. (2012), "Business planning and management accounting in strategic networks: theoretical development and empirical evidence from enterprises' network agreement", *Management Control*, Vol. 3, pp. 91-116.

Cardoni, A., Zanin, F., Bartolacci, F. and Tompson, G.H. (2018), "Strategic planning for value creation in business networks", *Conceptual Frameworks and Theoretical Proposals, in Management Control*, Vol. 1, pp. 17-44.

Chenhall, R.H. (2003), "Management control systems design within its organizational context: findings from contingency-based research and directions for the future accounting", *Organizations and Society*, Vol. 28 Nos 2/3, pp. 127-168.

Cisi, M., Devicienti, F., Manello, A. and Vannoni, D. (2018), "The advantages of formalizing networks: new evidence from Italian SMEs", *Small Business Economics*, Vol. 54 No. 4, available at: https://doi.org/10.1007/s11187-018-0127-0

Coad, A.F. and Cullen, J. (2006), "Inter-organizational cost management: towards and evolutionary perspective", *Management Accounting Research*, Vol. 17 No. 4, pp. 342-369.

Cooke, P. (2002), *Knowledge Economies: Clusters, Learning and Cooperative Advantage*, Routledge, London.

Darbi, W.P.K. and Knott, P. (2016), "Strategising practices in an informal economy setting: a case of strategic networking", *European Management Journal*, Vol. 34 No. 4, pp. 400-413.

Das, T.K. and Teng, B.S. (1997), "Between trust and control: developing confidence in partner cooperation in alliances", *Academy of Management Review*, Vol. 23 No. 3, pp. 491-512.

Das, T.K. and Teng, B.S. (1998), "Resource and risk management in the strategic alliance making process", *Journal of Management*, Vol. 24 No. 1, pp. 12-42.

Dekker, H.C. (2003), "Value chain analysis in interfirm relationships: a field study", *Management Accounting Research*, Vol. 14 No. 1, pp. 1-23.

Dekker, H.C. (2004), "Control of inter-organizational relationships: evidence on appropriation concerns and coordination requirements", *Accounting, Organizations and Society*, Vol. 29 No. 1, pp. 27-49.

Dodourova, M. (2009), "Alliances as strategic tools: a cross-industry study of partnership planning, formation and success", *Management Decision*, Vol. 47 No. 5, pp. 831-844.

Donkels, R. and Lambrecht, J. (1995), "Network and small business growth: an explanatory model", *Small Business Economics*, Vol. 7 No. 4, pp. 273-289.

Douma, M., Bilderbeek, J., Idenburg, P. and Looise, J. (2000), "Strategic alliances: managing the dynamics of fit", *Long Range Planning*, Vol. 33 No. 4, pp. 579-598.

Doz, Y.L. (1996), "The evolution of cooperation in strategic alliances: initial conditions, or learning processes?", *Strategic Management Journal*, Vol. 17, pp. 55-83.

Dyer, H.J. and Nobeoka, K. (2000), "Creating and managing a high performance knowledge sharing network: the Toyota case", *Strategic Management Journal*, Vol. 21 No. 3, pp. 345-367.

Eurostat (2015), "Annual report on European SMEs 2015/2016".

Fang, E. (2011), "The effect of strategic alliance knowledge complementarity on new product innovativeness in China", *Organization Science*, Vol. 22 No. 1, pp. 158-172.

Ferreira, M., Storopoli, J. and Serra, F. (2014), "The extant research on strategic alliances: a bibliometric study of the past two decades", *Academy of Management Proceedings*, Vol. 2014 No. 1.

Flanagan, D.J., Lepisto, D.A. and Ofstein, L.F. (2018), "Coopetition among nascent craft breweries: a value chain analysis", *Journal of Small Business and Enterprise Development*, Vol. 25 No. 1, pp. 2-16.

Fornell, C. and Bookstein, F.L. (1982), "Two structural equation models: LISREL and PLS applied to consumer exit-voice theory", *Journal of Marketing Research*, Vol. 19 No. 4, pp. 440-452.

Gassmann, O., Zeschky, M., Wolff, T. and Stahl, M. (2010), "Crossing the Industry-Line: breakthrough innovation through Cross-Industry alliances with 'Non-Suppliers'", *Long Range Planning*, Vol. 43 Nos 5/6, pp. 639-654.

Geringer, J.M. and Hebert, L. (1989), "Control and performance of international joint ventures", *Journal of International Business Studies*, Vol. 20 No. 2, pp. 235-254.

Gluck, F.W. (1984), "Vision and leadership in corporate strategy", in Hax, A. (Ed.), *Readings on Strategic Management*, Ballinger Publishing Co., Cambridge, MA.

Gomes, E., Barnes, B.R. and Mahmood, T. (2016), "A 22 years review of strategic alliance research in the leading management journal", *International Business Review*, Vol. 25 No. 1, pp. 15-27.

Granovetter, M.S. (1985), "Economic action and social structure: the problem of emebeddedness", *American Journal of Sociology*, Vol. 91 No. 3, pp. 481-510.

Greene, F.J. and Hopp, C. (2017), "Are formal planners more likely to achieve new venture viability? A counterfactual model and analysis", *Strategic Entrepreneurship Journal*, Vol. 11 No. 1, pp. 36-60.

Greenwood, R., Suddaby, R. and Hinings, C.R. (2002), "Theorising change: the role of professional associations in the transformation of institutionalised fileds", *Academy of Management Journal*, Vol. 45 No. 1, pp. 58-80.

Gronum, S., Verreynne, M.L. and Kastelle, T. (2012), "The role of networks in small and medium-sized enterprise innovation and firm performance", *Journal of Small Business Management*, Vol. 50 No. 2, pp. 257-282.

www.manaraa.com

Gulati, R. (2007), "Managing network resources", *Alliances, Affiliations, and Other Relational Assets*, Oxford University Press, Oxford.

Gulati, R., Lavie, D. and Singh, H. (2009), "The nature of partnering experience and the gains from alliances", *Strategic Management Journal*, Vol. 30 No. 11, pp. 1213-1233.

Haans, F.J. and Pieters, C. (2016), "Thinking about U: theorizing and testing U- and inverted U-shaper relationship in strategy research", *Strategic Management Journal*, Vol. 37 No. 7, pp. 1177-1195.

Hakansson, H., Krauss, K. and Lind, J. (2010), *Accounting in Networks*, Routledge, London.

Hoang, H. and Antoncic, B. (2003), "Network-based research in entrepreneurship: a critical review", *Journal of Business Venturing*, Vol. 18 No. 2, pp. 165-187.

Hoffmann, H. and Schlosser, R. (2001), "Success factors of strategic alliances in small and medium-sized enterprises – an empirical survey", *Long Range Planning*, Vol. 34 No. 3, pp. 357-381.

Hopwood, A. (1996), "Looking across rather than un and down: on the need to explore the lateral processing of information", *Accounting, Organizations and Society*, Vol. 21 No. 6, pp. 51-72.

Huggins, R. (2010), "Forms of network resource: knowledge access and the role of inter-firm networks", *International Journal of Management Review*, Vol. 12 No. 3, pp. 335-352.

Inpken, A.C. (1996), "Creating knowledge through collaboration", *California Management Review*, Vol. 39 No. 1, pp. 123-140.

Jack, S.L. (2010), "Approaches to studying networks: implications and outcomes", *Journal of Business Venturing*, Vol. 25 No. 1, pp. 120-137.

Jackson, P. and Cardoni, A. (2017), "Organizational design and collaborative networked organizations in a Data-Rich world: a cybernetics perspective", in Camarinha-Matos L.M., Afsarmanesh H. and Fornasiero R. (Eds), *Collaboration in a Data-Rich World*, Springer, London, pp. 185-193.

Jarrillo, J.C. (1988), "On strategic networks", *Strategic Management Journal*, Vol. 9, pp. 31-41.

Johanson, M. and Lundberg, H. (2011), *Network Strategies for Regional Growth*, Palgrave MacMillan, London.

Kaplan, R.S., Norton, D.P. and Rugelsjoen, B. (2010), "Managing alliances with the balanced scorecard", *Harvard Business Review*, Vol. 1, pp. 2-8.

Langfield-Smith, K. (2008), "The relations between transactional characteristics, trust and risk in the start-up phase of a collaborative alliance", *Management Accounting Research*, Vol. 19 No. 4, pp. 344-364.

Langfield-Smith, K. and Smith, D. (2003), "Management control systems and trust in outsourcing relationships", *Management Accounting Research*, Vol. 14 No. 3, pp. 281-307.

Larson, A. (1992), "Networks dyads in entrepreneurial settings: a study of the governance of exchange relationhips", *Administrative Science Quarterly*, Vol. 37 No. 1, pp. 76-104.

Li, J., Tian, L. and Wan, F. (2015), "Contextual distance and the international strategic alliance performance: a conceptual framework and a partial meta-analytic test", *Management and Organization Review*, Vol. 11 No. 2, pp. 289-313.

Lombardi, R., Trequattrini, R. and Battista, M. (2014), "Systematic errors in decision making processes: the case of the italian serie a football championship", *International Journal of Applied Decision Sciences (IJADS)*, Vol. 7 No. 3.

Lombardi, R., Tiscini, R., Trequattrini, R. and Martiniello, L. (2020a), "Strategic entrepreneurship: personal values and characteristics influencing SMEs' decision-making and outcomes. The gemar balloons case", *Management Decision*, available at: https://doi.org/10.1108/MD-10-2019-1416

Lombardi, R., Trequattrini, R., Cuozzo, B. and Paoloni, P. (2020b), "Knowledge transfer in the football industry: a sectorial analysis of factors and determinants", *Management Decision*, available at: https://doi.org/10.1108/MD-08-2019-1100

Luo, Y. (2008), "Structuring interorganizational cooperation: the role of economic integration in strategic alliances", *Strategic Management Journal*, Vol. 29 No. 6, pp. 617-637.

Luo, X. and Deng, L. (2009), "Do birds of a feather flock higher? The effects of partner similarity on innovation in strategic alliances in Knowledge-Intensive industries", *Journal of Management Studies*, Vol. 46 No. 6, pp. 1005-1030.

Macpherson, A. and Holt, R. (2007), "Knowledge, learning and small firm growth: a systematic review of the evidence", *Research Policy*, Vol. 36 No. 2, pp. 172-192.

Mamavi, O., Meier, O. and Zerbib, R. (2015), "Alliance management capability: the roles of alliance control and strength of ties", *Management Decision*, Vol. 53 No. 10, pp. 2250-2267.

Mintzberg, H. (1983), *Structure in Fives: Designing Effective Organizations*, Prentice-Hall, Englewood Cliffs, NJ.

Moeller, K. (2010), "Partner selection, partner behavior, and business network performance", *Journal of Accounting & Organizational Change*, Vol. 6 No. 1, pp. 27-51.

Mouritsen, J., Hansen, A. and Hansen, C.O. (2001), "Interorganizational controls and organizational competencies: episodes around target cost management functional analysis and open book accounting", *Management Accounting Research*, Vol. 12 No. 2, pp. 221-224.

Nakos, G. and Brouthers, K. (2008), "International alliance commitment and performance of small and medium-size enterprises: the mediating role of process control", *Journal of International Management*, Vol. 14 No. 2, pp. 124-137.

Neergaard, H. and Ulhoi, J.P. (2006), "Government agency and trust in the formation and transformation of interorganizational entrepreneurial network", *Entrepreneurship Theory and Practice*, Vol. 30 No. 4, pp. 519-539.

Nooteboom, B. (1996), "Trust, opportunism and governance: a process and control model", *Organization Studies*, Vol. 17 No. 6, pp. 985-1010.

Obeng, B. (2019), "Strategic networking and small firm growth in an emerging economy", *Journal of Small Business and Enterprise Development*, Vol. 26 No. 1, pp. 43-66, available at: https://doi.org/10.1108/JSBED-01-2018-0035

OECD (2017), *Meeting of the OECD Council at Ministerial Level*, OECD Paris.

Otley, D., Broadbent, J. and Berry, A. (1995), "Research in management control: an overview of its development", *British Journal of Management*, Vol. 6 No. s1, pp. 31-44.

Parida, V., Patel, P.J., Wincent, J. and Kohtmaki, M. (2016), "Network partner diversity, network capability and sales growth in small firms", *Journal of Business Research*, Vol. 69 No. 6, pp. 2113-2117.

Parker, S.C. (2008), "The economics of formal business networks", *Journal of Business Venturing*, Vol. 23 No. 6, pp. 627-640.

Parkhe, A. (2003), "Institutional environments, institutional change and international alliances", *Journal of International Management*, Vol. 9 No. 3, pp. 305-316.

Porter, M.E. (2010), "Location, competition and economic development: local clusters in a global economy", *Economic Development Quarterly*, Vol. 14 No. 1, pp. 15-34.

Pouder, R. and St. John, C. (1996), "Hot spots and blind spots: geographical clusters of firms and innovation", *Academy of Management Review*, Vol. 21 No. 4, pp. 1192-1225.

Ricciardi, A., Cardoni, A. and Tiacci, L. (2014), "Strategic context, organizational features and network perfomances: a survey on collaborative networked organizations of italian SME's", in Camarinha-Matos L.M. and Afsarmanesh H. (Eds), *Collaborative Systems for Smarted Networked Environment*, Springer, London.

Ring, P. and Van de Ven, A. (1992), "Structuring cooperative relationships between organizations", *Strategic Management Journal*, Vol. 13 No. 7, pp. 483-498.

Rubino, M. and Vitolla, F. (2018), "Implications of network structure on small firms' performance: evidence from Italy", *International Journal of Business and Management*, Vol. 13 No. 4, pp. 46-56.

Rubino, M., Vitolla, F. and Garzoni, A. (2017), "How network managers influence the export intensity: evidence from Italy", *Journal of Management Development*, Vol. 36 No. 10, pp. 1317-1331.

Rubino, M., Vitolla, F. and Garzoni, A. (2019), "Network contract and internationalization: evidence from Italian firms", *Management Decision*, Vol. 57 No. 11, pp. 2911-2939.

Ryu, W., McCann, B. and Reuer, J. (2018), "Geographic co-location of partners and rivals: implications for the design of R&D alliances", *Academy of Management Journal*, Vol. 61 No. 3, pp. 945-965.

Saxton, T. (1997), "The effects of partner and relationship characteristics on alliance outcome", *Academy of Management Journal*, Vol. 40 No. 2, pp. 443-461.

www.manaraa.com

Schilke, O. and Goerzen, A. (2010), "Alliance management capability: an investigation of the construct and its measurement", *Journal of Management*, Vol. 36 No. 5, pp. 1192-1219.

Seal, W.B., Cullen, J., Dunlop, A., Berry, T. and Ahmed, M. (1999), "Enacting european supply chain: a case study on the role of management accounting", *Management Accounting Research*, Vol. 10 No. 3, pp. 303-322.

Shah, R.H. and Swaminathan, V. (2008), "Factors influencing partner selection in strategic alliances: the moderating role of alliance context", *Strategic Management Journal*, Vol. 29 No. 5, pp. 471-494.

Shannon, W., Anderson, M.H., Dekker, H.C. and Sedatole, K.L. (2014), "The use of management controls to mitigate risk in strategic alliances: field and survey evidence", *Journal of Management Accounting Research*, Vol. 26 No. 1, pp. 1-32.

Shenkar, O. (2001), "Cultural distance revisited: towards a more rigorous conceptualization and measurement of cultural differences", *Journal of International Business Studies*, Vol. 32 No. 3, pp. 519-535.

Shields, M.D. (1997), "Research in management accounting by North amerincans in the 1990s", *Journal of Accounting Research*, Vol. 9, pp. 3-61.

Street, C.T. and Cameron, A.F. (2007), "External relationships and the small business: a review of small business alliance and network research", *Journal of Small Business Management*, Vol. 45 No. 2, pp. 239-266.

Taticchi, P., Cagnazzo, L., Beach, R. and Barber, K. (2012), "A management framework for organisational networks: a case study", *Journal of Manufacturing Technology Management*, Vol. 23 Nos 5, pp. 593-614, available at: https://doi.org/10.1108/17410381211234426

Trequattrini, R., Lombardi, R. and Battista, M. (2015), "Network analysis and football team performance: a first application", *Team Performance Management: An International Journal*, Vol. 21 Nos 1/2, pp. 85-110, available at: https://doi.org/10.1108/TPM-03-2014-0016

Van Gils, A. and Zwart, P. (2004), "Knowledge acquisition and learning in dutch and belgian SMEs: the role of strategic alliances", *European Management Journal*, Vol. 22 No. 6, pp. 685-692.

Viemose, S. and Viemose, H.C. (1996), "*Evaluation of the Network Programme 1989-1992'', Amphion Report, Ministry for Trade and Industry. Copenaghen.*

Watson, K. and McGowan, P. (2019), "Emergent perspectives toward the business plan among nascent entrepreneur start-up competition participants", *Journal of Small Business and Enterprise Development*, Vol. 26 No. 3, pp. 421-440.

Yamakawa, Y., Yangb, H. and Lin, Z. (2011), "Exploration versus exploitation in alliance portfolio: performance implications of organizational, strategic, and environmental fit", *Research Policy*, Vol. 40 No. 2, pp. 287-296.

Yayavaram, S., Srivastava, M. and Sarkar, M.B. (2018), "Role of search for domain knowledge and architectural knowledge in alliance partner selection", *Strategic Management Journal*, Vol. 39 No. 8, pp. 2277-2302.

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