The B2B relationship with a quality approach

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Abstract

Objectives. *This paper proposes a qualitative approach, based on heuristics, to assess the quality of B2B relationships between SMSs, according to the Relational Capability (RC) framework proposed by Alves et al. (2016).*

Methodology. *A total of 56 Relationship Quality Descriptors were defined. Each descriptor was extrapolated from the definitions of RC features proposed in the literature.*

Findings. *The proposed approach was applied to the case study of a real relationship between SMEs. The experimental results suggested that it could support the understanding of how specific characteristics of a relationship can affect the success of jointly produced products.*

Research limits. *Further studies are needed to demonstrate the effectiveness of this methodology. The limitation of this approach lies in the lack of weights used in the scoring of descriptors. Because some descriptors or dimensions are probably more important than others, further studies have to be carried out to better analyse mutual relations of the considered RC domains and the respective features, and to understand their relative importance in determining the quality of business relationships.*

Practical implications. *The proposed approach can be helpful to enhance the analysis and understanding of the nature of relationships and underline the aspects most related to power-dependence situations, which may compromise synergy between partners and negatively affect the success of the alliance.*

The originality of the study. *Despite several studies that have attempted to propose constructs and scale items useful to measure the RC, no method has yet been proposed that can support the general evaluation of the RC according to an RC framework.*

Key words: *B2B; business relationship; relational capabilities; business relationship assessment; dyadic relationships; the relationship between SMEs*

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Introduction

Over the past two decades, dyadic relationships and inter-organizational cooperation have become increasingly common as they are considered key factors for business success in an increasingly competitive market (Pagano, 2009; Pham *et al.*, 2017).

Nowadays, relationship development has recently become a central research focus in business management literature and is currently gaining more prominence when addressing the small firm sector (Samouel; 2007).

Dyadic business-to-business relationships play a critical role in today's business success in business-to-business environments. (Anderson et al.; 1994).

Relationship can be defined as a connection between two entities, in our case enterprises, in which an exchange of resources take place (hence Social Exchange Theory), necessary to seize opportunities and to be able to jointly face the challenges proposed by the surrounding environment (Ross and Robertson, 2007).

Business-to-business markets should be viewed as vast networks of interconnected companies that continually interact with one another. (Hakansson and Ford, 2002). This is the so-called "Industrial Network Approach", where companies and their relationships can be viewed as part of a complex network of interconnected relationships (Mengoni *et al.*, 2017).

A business network can be defined as a set of two or more connected business relationships. Each exchange relation is between business firms that are conceptualised as collective actors (Emerson, 1981). According to Cook and Emerson (1978; p. 725), "*a business network is important to measure how an exchange in one relation is contingent upon exchange (or non-exchange) in the other relation*".

In 1959, Thibaut and Kelly coined the Social Exchange Theory by primarily considering dyadic relationships and their group functioning (Carman, 1980; Kelley and Thibaut, 1978).

Social Exchange Theory holds that interaction between individuals can result in mutual support through the exchange of tangible or intangible resources (Homans, 1958). The basic assumption of this theory is that mutual aid serves to keep the relationship strong, and satisfy both partners (Blau, 1968; Homans, 1958).

Social exchange leads to the achievement of alliance goals but also to a strengthening of mutual trust; companies are more committed than ever to maintaining the exchange relationship for the long term (Lamble *et al.*, 2008).

According to Pierantonelli, "*the network shapes relationships, and relationships shape the network: in a network, firms are interdependent*" (2013; p.146). It is impossible to think that a company, taken individually, possesses all the resources necessary to achieve its goals: that is why it becomes important to establish a partnership: the members are interdependent and together they can achieve all the goals set (Baraldi *et al.,* 2012).

Hakansson and Snehota suggests that "*the outcomes of a business relationship can be described in terms of actor bonds, activity links and resource ties between the counterparts*" (1995; p.13). Each layer is interconnected to the others, and each effect is affected by the constellation of resources, pattern of activities and web of actors in the more comprehensive network.

In literature, several models identify the different stages companies pass through to create a value chain. Each model considers each stage as a time-bound process (Mandjak *et al.,* 2015).

Lee and Johnsen reported, also based on studies done by Ford (2011), four stages for relationship building: "*pre-relationship stage, exploratory stage, developing stage, and stable stage*" (2011, p.697). There is no compulsory chronological order: firms can also follow a scattered order, even skipping some steps. However, the basic premise remains the same: there must be a willingness, on both sides, to lend and share their resources and to adapt to the other party (Mandjak et al., 2015). Such adaptations may also increase dependence (e.g. social, cultural, and technical) between the actors, resources, and activities of both parties, as the company's ability to adapt to other actors may reduce (Mengoni *et al.*; 2017).

However, despite the proliferation of strategic alliances, empirical evidence showed that approximately 50% of partnerships do not live up to expectations and consequently fail (Schilke and Goerzen, 2010). In this regard, many researchers have taken steps to understand the factors that explain why some alliances are more successful than others (Cedrola, 2006).

Several studies, including this article, confirm that Relational Capability (RC) strongly conditions alliance goals and success (e.g. Pagano; 2006; Theoharakis *et al.*; 2009; Alves *et al.*; 2016).

This article aims to understand the relational factors on which the success or failure of a partnership depends. A concrete case study is presented to evaluate the quality of the alliance through the qualitative approach proposed by Alves et al. (2016), determining the relational dimensions that most influence the partnership's success. The case study presented may be generalisable, especially in the context of SMEs. SMEs are unable to adopt sudden changes to meet the vast and changing demands of the market. It is essential to establish a partnership to solve this problem. With the benefits that an alliance can bring, it will be possible to respond efficiently to market demands. (Ngugi *et al.*, 2010; McGrath, 2008).

1. Research background

Researchers have become increasingly interested in the organizational-level factors that explain why some companies have tremendous success with regard to alliance, and others have less (Cedrola, 2006; Baraldi *et al.*, 2014). Within the literature on alliance that focuses explicitly on collaborative value creation, it is possible to recognise two main research threads (Schilke and Goerzen, 2010).

The first one focuses on individual alliances or dyadic ties among firms, to analyse the impact of various relational and governance aspects that characterise the collaboration on value creation. In particular, much attention has been devoted to exploring the context within which these relationships take place, how firms stay connected and develop business opportunities in a synergic way (Giraldi, 2017; Hahn and Gold, 2014).

The first line of research consists of two fundamental models: sensing, studying the surrounding environment to search for new opportunities, and transformation.

Sensing means paying particular attention to information from the external environment in order to identify potentially valuable new opportunities as well as market demands (Zaheer and Zaheer, 1997). Thus, sensing and studying the environment requires some proactivity on the part of the firm (Sarkar *et al.,* 2001). Once the environment has been explored and the alliance has been forged, it is necessary to renew and adapt the business logic by adjusting it to the partner.

At the beginning of the partnership, the lack of a perfect alignment among its members is to be expected: one can foster such coupling through interaction and adaptation (Doz, 1996). Several researchers (e.g., Helfat *et al.*, 2007; O'Reilly and Tushman, 2007; Zahra *et al.*, 2006) have developed Teece *et al.*'s ideas, highlighting the importance of coordination, learning, sensing, and transformation in a dyadic relationship.

In literature, there are various types of alliances. These relations can be created in either tacit or planned conditions and can be either induced or routine (Aggarwal, 2019; de Leeuw; Gilsing; Duysters, 2019; Rothaermel, 2001; Torkkeli *et al.*, 2019). The tacit alliances are based on spontaneous and routine behaviours in which the company shares and obtains know-how through the partners (Gulati *et al.*; 2000; Rothaermel and Hees, 2007; Zhang *et al.*, 2019).

The induced network relationships focus on the resource requirements of the different firms that participate in the network. The firms aim at reaching their innovation goals by primarily planning long-term, usually cross-industry, network relationship strategies with other firms to obtain access to crucial competencies that they may lack (Adams *et al.,* 2019; Giacomarra *et al.*, 2019).

It is also possible for companies to create collaborative relationships with other companies to add value to the product, to propose an innovative solution or a competitive market offering (Nassimbeni, 1998).

Another type of alliance is the "value-adding partnership", which, as Johnston and Lawrence argue is, "*a collection of independent companies working together with the aim of managing the flow of goods and services along the value-added chain*" (1988, p.94), thus enabling clusters of small businesses to compete against large, established companies (Ytterhus *et al.*, 1999).

Finally, the "virtual corporation", a transient network of firms that focus on a specific market opportunity and only band together to achieve it, then dissolve the partnership (Bryne *et al.,* 1993).

The other stream of research mentioned focuses on the firm as a unit of capability and skills. It examines the possibility that partnership performance may be motivated by heterogeneity in alliance capabilities and the variability among firms to create and capture value from the alliances (Alves *et al.*; 2016).

Alliances are an opportunity to source needed resources that are typically found outside corporate boundaries (Pas and Teng, 2000).

Know-how transfer turns out to be a strategic key in alliances (Goerzen and Beamish, 2005). Learning from each other within the partnership positively impacts resources and knowledge (Steensma, 1996).

At the same time, the nature and quality of the established relationship play a significant role in the strengthening of a firm's RC because they are idiosyncratic (Espino-Rodrìguez and Rodrìguez-Dìaz; 2008).

So, to explain the reasons for the success of a partnership, it is necessary to analyse the capabilities that partners must put into play to achieve their goals. In particular, several studies evidenced that Relational Capability (RC) strongly influences goals and partnership success (e.g. Pagano, 2006; Theoharakis *et al.*, 2009; Alves *et al.*,2016).

2. The proposed approach

The approach proposed by Alves *et al.* (2016) is part of this line of research. It is a qualitative approach that aims to assess the quality of business relationships and determine the relationship skills (RC) involved, dimensions that influence the partnership's success (or failure).

The consequent rapid rise of studies in different scientific fields determined a lack of consensus regarding terminology and definition. The definition considered in this report is the study by Alves *et al.* They focused on research carried out in the context of SMEs' networks. They conceptualised RC as the "*purposeful creation and combination from shared resources, of structures within and between firms to jointly develop, manage conflicts, promote trust, transfer knowledge and information, with a view to organization value and learning among firms and achieving joint process improvements, adaptations and/or innovations in the inter-organizational cooperation*" (2016, pp. 1650012-4). The conceptualisation proposed in Alves *et al.* (2016) is closer to the definition of RC as "strategic/operational capabilities" provided in Kohtamäki *et al.* (2018).

Alves *et al.* (2016) stated that the evaluation of RC in inter-organizational cooperation might identify factors that should be improved in these relationships; if the previous statement is true, the author's opinion that the RC construct could be indirectly used to assess the quality of these relationships. It is possible to assume that the Relationship Quality represents "the potential for improving the different RC dimensions" (Kohtamäki *et al.* 2018).

Based on the results of five studies (i.e. Johnsen, Ford; 2006; McGrath, 2008; Sarkar *et al.*, 2009; Ngugi *et al.*,2010; Schilke, Goerzen; 2010), the authors proposed an RC theoretical framework based on five dimensions: coordination, culture, knowledge, technology and coadaptation. Each dimension included several sub-categories, called components. Below (Tab. 1), a table with the RC dimensions and components, the relative relationship quality descriptors and their code are presented.

Tab. 1: RC dimensions and components

RC dimensions and components defined by Alves *et al.* (2016)		Relationship quality descriptors	Code
Knowledge	Behavioural norms	Partners improve their ability to deal with conflicts and inconsistencies in the relationship.	CUL_7
	Behavioural norms	Partners agree to adopt specific behavioural norms	CUL_8
	Knowledge acquisition	The alliance allows partners to generate knowledge from external sources and absorb new capabilities.	KNOW_1
		The alliance promotes new and relevant information flows between partners and reduces the time spent searching for information.	KNOW_2
		The alliance encourages partners to acquire, integrate, share and use knowledge/skills for new co-creations	KNOW_3
		The alliance results in new business	KNOW_4
		Partners undertake formal and informal actions for knowledge creation and control.	KNOW_5
		Partners successfully integrate their existing knowledge with the information acquired from partners.	KNOW_6
	Communication	Partners are encouraged to improve communication with other players to extract information and increase the likelihood of accessing them.	KNOW_7
		Partners adopt a structured approach to managing communication.	KNOW_8
	Rewards and incentives	The alliance experience improves partners' perception about networks as a source of reliable information and as a feasible method for the creation and transfer of knowledge.	KNOW_9
		Partners adopt/develop specific techniques to facilitate collaboration.	KNOW_10
		The alliance experience improves partners' perception of the rewards, and the real and apparent risks of participating in partnerships.	KNOW_11
		Partners develop strong and effective resources and capability management skills that enable them to have well-managed or structured resources.	KNOW_12
		The alliance encourages partners to develop bilateral business plans	KNOW_13
Technology	Technology transfer	The alliance promotes a combination of resources and capabilities of partners to facilitate the development of new products.	TEC_1
		The alliance promotes the creation of ideas based on partners' abilities of self-reflection by encouraging the identification of bilateral technological needs and the determination of opportunities to combine the technologies available	TEC_2
		The alliance promotes proficient use of knowledge in production, investment, and innovation.	TEC_3
	Collaborative innovation	Partners improve their ability to collaborate with other organisations specialised in different areas to facilitate collaborative innovation development and co-creation of value	TEC_4
		Partners exploit technological opportunities and human resources of partnership towards co-innovation	TEC_5
		The realisation of co-innovation and collaboration and it allows partners to reduce the time-to-market	TEC_6
	Technical routines	The alliance allows the construction of strong relational links between partners that make new ideas spread more rapidly and facilitate their development and integration.	TEC_7
		The alliance allows partners to improve their ability to create custom, integrated value systems.	TEC_8
		Partners work out effective routines to improve product development	TEC_9
Coadaptation	Change and solutions	Thanks to the alliance, partners access external resources in pursuit of their opportunities.	COA_1
		To achieve alliance objectives, partners have to change features and ways of working.	COA_2
		The alliance results in new and more effective products, processes, and solutions	COA_3
		Partners are encouraged to identify future opportunities of coadaptation aligned with each other's needs and aspirations.	COA_4
		To pursue the alliance goals, partners sacrifice short-term benefits (including economic) for long-term ones.	COA_5
		Partners heavily invest in the adaptation process of network members	COA_6
		The alliance accommodates changing demands, thanks to—the development of a specific flexible organisational form of the management process.	COA_7
	Previous experiences	Partners have previous experience with partnerships	COA_8
		Partners are currently involved in other partnerships	COA_9
		Partners have already built competitive alliance networks	COA_10
	Evaluation	Partners know their needs and requirements	COA_11
		Partners identify opportunities they want to gain and what they aim to achieve thanks to the partnership.	COA_12
	Close relationships	Partners build strong relationships between them	COA_13
		Partners have a strong interest in maintaining close relationships between them, to find and exploit opportunities.	COA_14
		Partners proactively manage the network to strengthen the value ties and expand their business.	COA_15

Source: RC dimensions and components by Alves *et al.* (2016)

The proposed descriptors can be used as heuristics to support expert evaluation of the relationships' quality. For this purpose, at least three experts must be involved in the evaluation. Evaluation can be performed by answering each descriptor using a 1-5 Likert scale (i.e. 1 = strongly disagree; 5 = strongly agree).

The scores related to the components are estimated as the mean of the scores collected by the respective descriptors. Similarly, for each dimension, the score is computed as the mean of scores of the respective components.

The materials used to find information can be found by analysing company documents and archives, organising interviews, surveys or collecting direct/indirect observations.

3. The case studies

In the case study presented below, the RC theoretical framework by Alves *et al.* is applied. The work refers to a partnership between two small Italian companies: Antrox and Nel Design.

Antrox is a small Italian company specialised in providing tailored LED and Cold Cathode lighting solutions. It was founded in Italy (Ancona, Marche Region) in 2000 on the initiative of two business partners. In 2014, the Antrox governance changed: two young partners, respectively in charge of management and marketing strategy, and technical and sales processes, replaced the old ones. The company payroll consists of four employees: an engineer, a salesperson, an IT expert and an accountant.

The cold cathode represents the technology that has provided the most business opportunities; it is highly customisable in terms of shape and colour, but it requires substantial technical knowledge to be realised. Antrox only approached the overall market of LED lighting to bring new business opportunities in 2015.

Antrox is composed of lighting tech designers, who create custom designs based on customer requirements, which lead to the production of highly customised lighting systems.

The production of the solution is carried out by different first-tier suppliers, located internationally. Antrox's customers are primarily distributors of lighting solutions, architect, and contractors. Most of its revenues come from abroad, particularly from extra-EU countries, which alone make up 80% of the total. The company's revenues range from 700,000 Euro to 2.4 M Euro according to the size of the architectures they supply to.

Nel Design is an Italian micro company located in the Abruzzo Region, founded in 2010. It is specialised in polystyrene carving for construction and design purposes. Their products are not simple blocks of polystyrene: they are highly resistant but very lightweight. The company produces objects in any shape at a minimal cost. Two people run the company: one in charge of management and strategy, and the other in charge of technology development. The company also employs three cutting machine operators. Every year, revenues vary from 200,000 Euro to 250,000 Euro.

Nel Design invested highly in technological equipment, most of which is numerically controlled. The company also supports its customers in the design process. In particular, it is an expert in virtual prototyping. Once the final approval comes through, the 3D digital models are sent to production to create tailored shapes, subjected to a coating process to make the structures resistant. The material resulting from this process is called Porotex. Porotex is primarily sold to the construction industry and specifically to specialised companies as outdoor decorations for buildings, and objects for interior design.

The company sells exclusively in the Italian market for reasons related to its lack of capabilities to engage with foreign distributors; the marketing function is not developed, and nobody speaks English.

Antrox and Nel Design not only differ in the type of products they design and produce, but also in turnover (i.e. Antrox: 1 million Euro; Nel Design; 200,000 Euro), sales expansion (i.e. Antrox: 90% foreign customers; Nel Design: 100% customers within 150 km), customers' organisation, personnel skill, and exploited information communication technologies. Instead, they share the

following elements: (a) the manufacturing paradigm they follow, which is based on solid product customisation, and (b) the market sector in which they operate, i.e. architecture and contract furniture.

There are points of convergence between the two companies, identifiable in the intense personalisation of the product and the same reference market (for both architecture and furniture). However, some points of divergence, such as the products sold, are different, as is the turnover generated and the expansion of the sales market (national/local vs global).

The current owners of Antrox and Nel Design have known each other for over 15 years. Looking back, the origins of this business relationship can be traced to an accidental event that took place in 2008. At that time, the Antrox CEO offered consulting services at Policolor, a small polystyrene carving company. This was where they met, and a relationship of mutual respect gradually developed between them. In 2010, the future CEO of Nel Design left Policolor to create Nel Design with a pool of other people. In 2012, after a few years of adjustments, the CEO of Nel Design tried to reconnect with the CEO of Antrox. Nel Design was participating in a project with a contractor to realise turnkey furniture solutions. The CEO of Nel Design asked Antrox to join the project for the lighting part. This time the CEO of Antrox turned down the collaboration, as he was sceptical about the contractor's reliability. But the business relationship eventually got off the ground in 2014. The Nel Design CEO contacted the Antrox CEO again, asking him for help in trying out the idea of inserting led lights into a Porotex shell, and the CEO of Antrox accepted.

The analysis of the business relations between these two firms was divided into two main phases:

1. The first phase was based on a commercial relationship established to produce LED polystyrene lamps.

   The final product, called Antrox Lab, however, came up against numerous critical issues: the sceptical attitude of the public towards polystyrene, considered a low-quality material, the excessive price when taking into account the material used, and an increase in time-to-market and delivery time due to custom production requests.

   Six months after marketing, only 2 Antrox Lab products had been sold. It was a failure for the partnership, but it also proved to be a turning point (Giraldi et al., 2017). Antrox decided to enlist the help of a researcher to investigate the reasons behind the poor market results.

2. The second phase led to a decisive qualitative leap in the partnership thanks to the application of the qualitative approach proposed by Alves et al. (2016) based on the Relational Capabilities. The two companies realised that their relationship quality was relatively poor. They thus proceeded to adopt significant improvements in various Relational Capabilities dimensions. This led to a "rebirth" of the partnership, and to its commercial success.

4. The applied method

The investigation adopts the action research methodology because it can capture the dynamism of the context, it pursues action and research outcomes at the same time, it is reflective, participative, and responsive to a continuously changing situation such as that which characterises the B2B relationship between the two companies under studied (Eden and Hyxham, 1993).

After the failure of Antrox Lab in 2015, the Antrox company wanted to evaluate the causes of failure and the effectiveness of the partnership, strictly connected to its relational capability qualities.

Ten face-to-face interviews, each of from 30 minutes to one hour in length, were conducted with the respective CEOs of Antrox and Nel Design to investigate the quality of the partnership under the five dimensions of Alves et al. (2016): level of coordination, culture, knowledge, technology, and co-adaptation. Data were collected from September 2014 to April 2016 through face-to-face interviews.

To increase case validity, we had triangulated between different data sources (Eisenhardt, 1989): participation in meetings, email and websites analysis, internal reports, and brochures.

During these interviews, the researcher asked the CEO questions that referenced the dimensions of the Alves *et al.* (2016) approach. In this experimental field research, the CEOs' contributions provided detailed insights into the relationship development process and all the technical and social interdependencies established between the two companies (Pierantonelli *et al.,* 2015).

The enterprises wanted to investigate the reasons behind the poor market results. The researcher started with a qualitative interview, requesting the CEOs' opinions on cooperation, co-adaptation, and knowledge exchange within the partnership. He then asked them to express a quantitative judgment, i.e., a rating, on a Likert scale of 1 to 5, on what had been said thus far. Through the evaluation of the relational capabilities (RC) by Alves et al. (2016), using the Likert scale (1-5), the researcher pointed out some criticalities of their project.

In the darkest period of the partnership, the researcher was called to analyse the "health" of the partnership and make a comparison between the alleged benefits and the potential failure. It was essential to understand the critical factors for the outcome of the relationship, and this was done through the application of the approach of Alves et al. (2016). However, it was equally important to study the competitive dynamics inherent in the manufacturing context and whether the partnership was truly capable of benefiting partners and products.

The above shows that creating a partnership may not lead to successful outcomes in the short term (Hartley *et al.,* 1997).

In light of this, market research was carried out to understand the level of competition of that product and, more generally, where the polystyrene market was heading.

The characteristics of the partnership were determined with the approach of Alves *et al.*. To ensure multidisciplinary evaluation, an expert manager was involved. The Consultant was asked to express their judgments of the relationship for each quality descriptor using a 1-5 Likert scale. Then, the score for each descriptor was computed as the median of votes, and the score related for each component was determined as the mean of the score of the respective components.

From the consulting, the researcher was able to ascertain that in the lighting sector, there had been an extensive and rapid diffusion of LED technology compared to the previous technology based on the cold cathode (used by Antrox). In particular, reference was made to the broader access to potential users regarding, above all, the greater predisposition to industrial level processing through widespread replicability on a large scale. Furthermore, LED materials were considered more reliable, of medium-long life, with reduced maintenance costs and reduced consumption correlated to a low environmental impact (Mangiacristiani; 2017). Feedback was requested from lighting experts to test their perceptions and the main criticalities; Porotex material proved lighter in weight, more customisable and slightly more affordable than traditional lighting solutions, but Nel Design needed to work on the coating to increase the feeling of resistance and durability (Mengoni *et al.;* 2017).

Having identified the factors that influenced the outcome of the relationships based on the approach of Alves et al. (2016), after an accurate analysis of the competitive landscape and also taking into consideration the relationship between the two owners of the respective companies, the manager predicted that the alliance would only achieve its hoped-for benefits in the medium-long term by implementing a process of transformation of its inter-organizational relationships.

Following the detection of the constant growth in demand for LED light sources at the expense of the demand for cold cathode fluorescent lamps, Antrox and Nel Design combined their expertise to jointly produce Deko, a wall lamp composed of a paintable Dekorex panel, and routable with a LED profile inserted inside the panel.

The strategic process within the alliance must develop in an interactive and joint manner (Håkansson, Ford; 2002). For this reason, companies must work together, making new proposals and comparing themselves with the partner, in order to achieve the set goals (Baraldi and Ciabuschi, 2010).

To adapt to the change in the sector, the changing demands of the market but also to the characteristics of the partner Nel Design, Antrox had to change its "direction", with a consequent change in the partnership (for the better!) (Mengoni *et al.*, 2017).

The relevance of the relationship in the B2B field (Ford *et al.*; 2011) was a constant for Antrox and Nel Design. As also stated above, small enterprises have few resources and a low level of capital investment: in order to develop, they must necessarily resort to partnerships, allying with other companies to make up for their limitations (Capaldo, 2007; Mangiacristiani, 2017). Therefore, the model proposed by Alves et al. (2016) is generalisable to any type of partnership and business case.

5. Results

An action research methodology is applied to a case study to show the shifting in the goals that occurred during the relationship evolvement and to give evidence of the impact on both companies' initiatives, reactions, and interdependencies (Mengoni *et al.*; 2017).

The action research methodology applied to the presented case study showed a shift in the goals that occurred during the relationship evolvement. Two significant phases in the history of the relationship can be identified:

The first phase, characterised by a structured business relationship, aimed to produce innovative lamps with a polystyrene structure. This business idea resulted in poor market results.

A second phase, characterised by business cooperation, aimed to supply architectural decorations. This shift had an impact on inter-firm dependences, initiatives, and strategies, and resulted in business success.

The first phase began in 2014 thanks to Antrox's idea of combining LED technology with new materials, including polystyrene decorations: the "Antrox Lab" product was patented to take advantage of Antrox's established reputation in the professional lighting market and the industrial supply sector. In this way, Antrox benefited from Nel Design's technical skills and machinery. At the same time, Nel Design was able to take advantage of Antrox's commercial network to make itself known in foreign markets.

The design process was quite complex and was characterised by iterative cycles to adapt solutions to customers' needs, manufacturing and installation requirements, and LED limitations— this increased time to market and delivery time. In addition, the companies came up against a sceptical attitude towards polystyrene, as it was generally considered a fragile and low-value material. Also, the Lab Antrox price was considered too high for the customer.

In March 2015, after six months of commercialisation, Antrox Lab products registered only two sales: it was a failure.

In April 2015, the relationship between the parties was at a dead end: the companies could not cut production costs without losing quality. Two months later, they decided to put aside the Antrox Lab project and to change the purpose of their collaboration: the second phase of the relationship started.

Nel Design proposed to Antrox to sell its products - architectural decorations - under the name of AntroxLab. The idea was to "exploit" Antrox's worldwide network of contacts to offer their expertise. Antrox would have to propose Nel Design's realisations to its distributors, retaining a commission for their sale Nel Design. Antrox would manage the promotional and sales processes; Nel Design would oversee the physical realisation of the products. In November 2015, Antrox oversaw the email promotional campaign for the new Deko Wall project and the sales process, while Nel Design was in charge of the physical realisation of the project components. The product was very successful from the launch of the email campaign. Antrox proposed furniture made of Porotex walls to Palm Jumeirah Hotel in Dubai and won the contract. Figure 1

Thanks to this experience and other similar ones, the two companies renewed the Antrox Lab project. This time, they thought up a new product line consisting of lighting walls (i.e. Wallux) and decorative architectural lighting elements (Deko).

Fig. 1: Examples and applications of decorative architectural lighting elements (Deko)

Source: Antrox Catalogue 2017

New lines were created by merging the companies' competence and specialisation.

Antrox witnessed an increase in sales of about +20% in 2016, while Nel Design entered the global market.

From a careful analysis and comparison of the two phases, it was possible to see an increase in relational quality in the second phase compared to the beginning of the partnership. Relationships that characterised the first phase of the alliance reveal several critical aspects, most related to the Knowledge, Technological and Coadaptation dimensions. In particular, the coadaptation components "Changes and solutions" and "Previous experiences" resulted in low quality.

In this first phase, Nel Design was more of a supplier than a partner with equal responsibilities. Actually, 70% of the Lab outcomes were achieved by Antrox and the remaining 30% by Nel Design. Although both parties were highly committed, Antrox had control of the overall process and put more energy into the shared project realisation. Nevertheless, Nel Design's machinery and capabilities were fundamental for the project, and Antrox depended on them.

Partners do not succeed in the same way when accessing external resources to pursue their opportunities (COA 1 = 2): while Nel Design can profit from Antrox's network and know-how, Antrox fails to exploit the knowledge of Nel Design in the same way. This also limited the possibilities of identifying other opportunities aligned with the partners' needs and aspirations (COA 4 = 3).

Moreover, the effort required of Nel Design was superior to that of Antrox: Nel Design had to re-adapt to the partner's characteristics and way of working (COA 2 = 3), investing heavily in the co-adaptation process (COA 6 = 2).

Other aspects that limited the quality of the "Changes and solutions" component were low-risk propensity (COA 5 = 1), deficiency in organisation flexibility (COA 7 = 2) and poor results in the effectiveness of new product and processes (COA 3 = 3).

Also, the quality of the "Previous experience" component was poor because only Antrox had previous experiences in partnership (COA 8 and 9 = 3).

6. Discussion

Both Antrox and Nel Design realised that the initial project failure was explicitly due to the high cost of production and the complicated realisation process implemented to meet client requirements and respect the technical constraints of LED coupled with Porotex. The main criticalities of the Antrox Lab project were:
● The lack of specialised human resources capable of creating competitive artefacts to enter the market of decorative and architectural design lamps;

- The numbers of iterations, which sometimes lost the initial design purpose, due to the numerous iterations necessary to satisfy the customer need and the production constraints;
- The complexity of the production and sale processes;
- The lack of unique control of the overall process that guarantees delivery time is respected;
- The poor market perception of Porotex that considers the artefact to be composed of a less-valued material compared to traditional ones (plasterboard, for instance);
- The higher price (+30%) than expected by the architectural market.

The relationship quality that characterises the second phase has significantly improved, particularly in the "Knowledge" and "Change and solutions" dimensions.

However, upstream of these reasons, the analysis of the quality of relationships characterising the first alliance period highlighted a significant issue: relations between partners are mostly power-dependent. Antrox played the leading role in this phase: it managed the design process of the lamps, as the company knew better than Nel Design which solutions would satisfy the customer requirements, both in terms of shapes and functionalities, and had the control of the overall production process, taking responsibility for all the promotion and marketing activities.

Contrariwise, Nel Design was mainly a supplier rather than a partner with equal responsibilities. Despite being the only one with expertise in the manufacturing process of Porotex products, Nel Design accepted and implemented the suggestions made by Antrox regarding how to organise the production activities.

Results evidenced that the Antrox-centric organisation of the partnership resulted in low synergy between partners ("Integration and synergy" = 3:29) and prevented communication ("Communication" = 3), information sharing ("Knowledge acquisition" = 3), technology transfer ("Technology transfer" = 3:33), and co-adaptation actions ("Changes and solutions" = 2:29). Moreover, it hampered the development and integration of new ideas ("Technical routines" = 3).

In this way, the quality of the relationship was compromised, although both parties were highly committed to pursuing the alliance's goals ("Close relationship" = 4; "Collaborative innovation" = 3:67).

In the same way, results show that the quality of the relationship strongly increased in the second phase of the alliance, when Nel Design assumed a more decisive role to redirect Antrox Lab towards a different brand identity.

Indeed, the relationship's growth, the exchange of knowledge, the years spent together, and the awareness of their own limits improved the partnership's strength and reduced the propensity for risk. However, this was not enough to motivate further improvement. Indeed, the primary reason for the relationship improvement had to be sought to improve the synergy between the partners, made possible by a more flexible partnership organisation. There was no longer a bond of dependence, but a relation of interdependence.

While in the first phase, Antrox's more excellent experience with partnerships, and its notoriety in the professional lighting market and the contract furniture industry, placed it in a dominant position compared to Nel Design, while a more distinguishable balance between the roles of the partners characterised the relationship in the second phase. In fact, in this phase, Nel Design abandoned its "wait and see" position and challenged the previous partnership structure. This shift produced a change in the power-dependence structure of the relationship, the activities performed, the actors performing them, the use of resources, and the parties' level of commitment.

This resulted in the improvement of features of the relationship most related to "Integration and synergy", "Knowledge acquisition", "Technology transfer", and "Changes and solutions" components. The new strategy made it possible to reduce time-to-market, positively impacting both delivery times and price. The shift also produced changes in proposed solutions that were more competitive in both the lamp and architecture markets.

At least one element could be identified as necessary in having affected the 'recovery' and 'transformation' phase of AntroxLab: the mutual interest of Antrox and Nel Design in rescuing part of the investments made to start up the second AntroxLab project. Antrox Lab turned out to be a

significant 'test' platform where the two companies scrutinised their capabilities and understood their business models. Therefore, some kind of relationship energy allowed the company to reshape the relationship when it seemed to be over, facilitating potential new market opportunities.

The case study presented here deals with an already existing social relationship (a relationship of mutual esteem already existed between Antrox CEO and Nel Design CEO) that was consolidated to the point of becoming a lasting business relationship, despite the initial setback (Håkansson and Snehota; 1995), whereas business relationships established solely for economic exchange purposes tend to collapse more easily. The purpose of the partnership was strategic and long-term, as it was seven years old. The result that emerged from the consultancy allowed an awareness of the past relationship dependence on power and the ideal relationship between interdependence and cooperation.

Antrox and Nel Design possess distinctive and non-overlapping competencies. As Pierantonelli argues, "*both companies know that they could create innovation by combining their skills and knowledge*" (2015, p.144).

This case study shows how the development of a new business is nonlinear and onerous. Indeed, the companies had to adapt, through intense interactions, to the counterpart's resources as each one was using different software packages and different ways to approach the product design (Giraldi, 2017). As interaction and collaboration between employees from both companies increased, so did interorganizational trust (Ashai *et al.*, 2015). Only through intensive interaction between the actors, it was it possible to overcome common obstacles to relationship formation.

7. Conclusions

Results suggest that the proposed method could be adequate to assess the quality of the considered relations.

In particular, the proposed approach can be helpful to determine poor factors of relationships and understand the nature of relationships better. It made it possible to underline the aspects most related to power-dependence situations, which may compromise synergy between partners and negatively affect alliance success.

Results evidenced that when power-dependence situations mainly determine relations, the relationships are characterised by low synergy, unilateral knowledge acquisition, scarce technology transfer between partners, and a low capability of the partnership with regard to changes and solutions. Therefore, when such a situation occurs, the quality of the relationship is low, and the product performances resulting from the collaboration are poor.

Conversely, when high scores concerning features most related to coadaptation characterise relationships, knowledge and technological dimensions, more competitive products and a more significant revenue are achieved.

However, despite results suggesting that the proposed qualitative method can be a valuable tool for deeply analysing and understanding the main features that characterise B2B relationships, further studies are needed to prove this.

At present, the method does not consider using weights in the scoring of descriptors. Since some descriptors or dimensions are probably more important than others, further studies need to be carried out to better analyse the mutual relations of considered RC domains and their respective features and to understand their relative importance in determining the quality of business relationships.

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