

Objectives and performance of interfirm cooperation: effects of cooperation management practices and transaction scope

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Abstract

Objective: This study analyzes the effect of cooperation management practices and transaction scope on the relationship between the objectives of cooperation and the cooperation performance in enterprises of the textile industry.

Method: a survey was conducted in companies of the Brazilian textile industry, with the 93 managers who answered the research serving as respondents of the survey. To analyze the hypotheses the structural equations modeling technique was applied.

Results: The survey results show that the respondents rated the cooperation as strategically important. To achieve the desired objectives of the strategic alliance, however, the cooperation management practices and the transaction scope are aligned. The strategic relevance of the cooperation positively affected the cooperation performance, when associated with information sharing, interaction between the partners and activities developed between the cooperation partners.

Contributions: the study contributes to the literature and the practice of companies by associating constructs of cooperation focused on the strategy for competitiveness with the performance of interfirm cooperation. The results revealed that, the greater the interaction of the stakeholders, the information sharing and the activities developed in the interfirm cooperation, the greater the association between the objectives and the performance of the cooperation.

Keywords: Objectives of cooperation. Cooperation management practices. Transaction scope Interfirm cooperation performance.

1. Introduction

The Theory of Cooperation, deriving from social and economic perspectives, departs from the premise that all or almost all partners involved in the cooperation can reach the objectives (May & Doob, 1937). Organizations have increasingly adopted interfirm cooperation in recent decades as a strategy to obtain competitive advantages (Dekker, Sakaguchi & Kawai, 2013; Ding, Dekker & Groot, 2013; Anderson & Dekker, 2014; Dekker, 2016; Dekker, Ding & Groot, 2016). Cooperation occurs not only through the existence of an activity carried out jointly though, but through the dynamics of the interactions inserted in this environment (Das & Teng, 1998).

Several types of interfirm relationships are addressed in the literature, such as: supply chain (Mouritsen, Hansen & Hansen, 2001), outsourcing (Langfield-Smith & Smith, 2003), franchise (Wu, 2015), joint production agreement (Eiriz, 2001), *joint venture* (Groot & Merchant, 2000). Some companies outsource non-core activities, such as training and employee benefits, while others close cooperative agreements with partner organizations (Groot & Merchant, 2000). Interfirm relationships can permit the insertion of actions to enhance the learning process and incentives for process and product innovations in the context of the partner organizations (Dias, 2018).

Cooperation is relevant in the interfirm relationships (Das & Teng, 1998). Nevertheless, it requires partner organizations to be aligned with the defined collaborative strategy, which implies planning metrics to measure the extent to which this strategy is being achieved. Communication should serve as a support to disseminate a common vision and encourage partners to improve the relationships and the results of the cooperation. The partners' involvement permits reporting on difficulties and occasional disputes, besides sharing information and adapting the strategy to monitor the evolution of the organizations' conditions (Kaplan, Norton & Rugelsjoen, 2010).

The involvement of various organizational activities in the cooperation requires greater commitment of the partners to the alliance (Kalaiganam, Shankar & Varadarajan, 2007), in order to provide strategic benefits to the partner companies. In this perspective, Contractor and Lorange (1988) and Groot and Merchant (2000) investigated the strategic reasons for organizations to engage in inter-firm cooperation. Mahama (2006) investigated the importance of information sharing between partner companies. Dekker et al. (2013) analyzed the interaction between employees in the cooperation process.

Some studies have reported a high failure rate in interfirm cooperation due to the risks involved in these transactions (Lunnan & Haugland, 2008). Vertical networks of interfirm cooperation can cause small companies to perform intermediary activities without receiving appropriate benefits in the cooperation, resulting in superficial relationships between partner companies and the absence of coordinated control mechanisms (Dias, 2018). Different types of interfirm relationships can stimulate competition though, especially in more fragmented sectors, and few companies can achieve success without partnerships (Groot & Merchant, 2000).

For organizations to achieve their goals, the interests of the partners need to be aligned. In this perspective, Dekker et al. (2016) examined the influence of the cooperation objectives on management practices and the performance of interfirm relationships from the perspective of financial management professionals registered at the *Controllers Institute* of the Netherlands. Based on the research results, the authors suggest that future studies analyze how the alignment between the objectives of cooperation, the transaction scope and the cooperation practices affect the organizational performance.

Given the above, the research question is: **How do the cooperation management practices and the transaction scope affect the relationship between the objectives of cooperation and the performance of interfirm cooperation?** Interfirm operations can be found in several industries, but some have a stronger orientation to the establishment of alliances due to the nature of the activities they develop, like in the case of the textile industry, target of this study, whose production chain covers the production of yarns and filaments, manufactured textiles, stamping (La Rovere, Hasenclever & Melo, 2001) and comprises the segments of spinning, weaving and finishing (Dias, 2018).

Gibbon (2002) points out that, since the 1990s, industrial textile companies have been undergoing transformations and most of them have sought alternatives such as technical innovations, quality improvements and strategic partnerships (supply chain, outsourcing, franchises, joint production agreements and *joint ventures*) to expand information exchanges and increase efficiency. Hence, the general objective of this study is to analyze the effect of cooperation management practices and transaction scope on the relationship between the objectives of cooperation and the cooperation performance in enterprises from the textile industry.

Theoretical-empirical studies have focused on these relationships and their impacts on interfirm relationships (Dekker et al., 2016). Ding et al. (2013) observed that, when there is a higher risk in the context of interfirm relationships, companies become more careful in the selection of their partners. Dekker et al. (2016) found that the characteristics of transactions are determined by the strategic relevance of the cooperation, which influences the performance management practices of organizations. These studies did not investigate the influence of cooperation management objectives and practices and the transaction scope on the performance of interfirms cooperation though (Dekker et al., 2016).

Brazilian research on interfirm cooperation is growing due to the proximity between the literature and the daily life of organizations regarding the impacts of the cooperation the partners establish (Balestrin, Verschoore & Reyes Jr, 2010). In recent decades, the role of accounting in the management of interfirm relationships has become a topic of interest of researchers, whose attention coincided with the significant increase in interfirm cooperative relationships (Anderson & Dekker, 2014). Thus, this study seeks to expand the literature on the strategic formulations of cooperation and the impact of these relationships on organizational performance.

The theoretical contribution of the study is to provide evidence of cooperation management practices and the transaction scope as mediators of the relationship between the objectives and performance of the cooperation. It contributes by demonstrating that the alignment between the objectives and the interfirm cooperation management practices, as well as the transaction scope, tend to result in a better performance of these relationships (Dekker et al., 2016). Another contribution is practical, assessing the effects of these factors in the interfirm cooperation among companies in the textile industry, which play a determining role in their competitiveness and survival, due to the greater expected impact on the partners' organizational performance in relation to the performance of companies outside the cooperation (Centenaro & Laimer, 2017).

The remainder of the study is structured as follows: the second section is focused on the association between the objectives and the performance of the cooperation, and the mediating effect of management practices and the transaction scope in this regard; in the third stage, we present the research method; in the fourth, the results of the empirical research and the analysis of the results are shown; and, in the last section, the final remarks are presented.

2. Theoretical Basis And Hypotheses

2.1 Objectives of cooperation and cooperation performance

The Theory of cooperation, created by May and Doob (1937), puts forward that individuals cooperate when they devote themselves to achieving similar or complementary goals that can be shared, and achieve superior performance when the partners achieve the goal in the same proportion. Das and Teng (1998) define cooperation as a partner organization's intention to achieve mutual interests compatible with other organizations instead of acting opportunistically.

The objectives of the cooperation refer to the strategic reasons that lead companies to participate in interfirm cooperation relationships (Dekker et al., 2016). According to Groot and Merchant (2000), the main objectives of cooperation are: cost reduction (access to relatively cheap labor); access to markets (overcoming trade barriers); technological development; and risk reduction.

When the objectives of the cooperation and individual objectives diverge between partner companies, there are conflicts of interest. This requires greater involvement of employees to cope with these conflicts (Kaplan et al., 2010). The companies often seek multiple objectives, which enhances the strategic relevance and complexity of controlling the cooperating (Reuer & Ariño, 2007). If individual objectives prevail, this will influence the cooperation (Dekker et al., 2016).

In this context, the management control system should promote the balance between the interests and the decisions to be made in relation to the objectives and strategies of interfirm cooperation (Kaplan et al., 2010). The facilitating function of the system is in making decisions consistent with the organizational strategy (Grafton, Lillis & Widener, 2010). Therefore, its function is to facilitate decision making in order to achieve the cooperative objectives, besides conciliating the divergent objectives among the partner companies (Ireland, Hitt & Vaidyanath, 2002).

This suggests that the performance of the strategic alliances needs to be evaluated. Although previous studies have investigated the performance of the cooperation, there is no consensus among researchers on the use of cooperation performance measures (Das & Teng, 2003). Some researchers propose subjective measures, such as perceived satisfaction or expectation achieved with the cooperation (Mahama, 2006). Others use objective measures such as profit, costs, revenues (Contractor & Lorange, 1998). It is highlighted that the interfirm relationship can serve not only to achieve economic-financial purposes, such as generating profits, but also to facilitate the exchange of knowledge and information between partner companies (Kogut, 1988).

Cooperation involves a more balanced and subjective measurement approach to the promise of what can be achieved (Anderson, 1990). Using more formal cooperation performance evaluation metrics can cause the relationship to break early due to the lack of time required for the cooperation to demonstrate its value. Therefore, the measures of the partners' perceived satisfaction with the performance of the cooperation provide broader information on what is intended with the cooperation (Dekker, 2016). In this sense, the first research hypothesis is formulated:

- **H₁: A positive relationship exists between the objectives of the cooperation and the cooperation performance.**

When the relevance of the cooperation objectives increases in the organizations, so do the coordination and control of cooperation practices (Dekker et al., 2016). For these authors, when a company pursues multiple strategically relevant cooperation objectives, this influences the type of assets used in the relationship, the interaction of the *boundary spanners*, the transaction scope, management practices and cooperation activities.

2.2 Objectives, cooperation management practices and performance

The cooperation management practices include the interaction of *boundary spanners* and information sharing (Mahama, 2006), which are determinant for the cooperation objectives and are expected to impact the performance of the interfirm relationship (Dekker et al., 2016). Cooperation management practices are necessary to manage the interfirm relationship, for example, planning, setting performance goals, interaction between partners, support to stakeholders, joint problem solving, information sharing and periodical monitoring (Dekker et al., 2013).

The interaction of the boundary spanners encourages companies to work together and monitor partner behavior and performance in the cooperation (Ittner, Larcker, Randall & Rajan, 1999). This interaction is performed by individuals responsible for interfirm management and who frequently interact with the partner companies (Wilson & Barbat, 2015). The individuals in this interaction are the formally designated managers to control the alliances, the supply chain managers, and those involved in the companies' business relationships, who come together to exchange information related to the cooperation (Wilson & Barbat, 2015).

Information sharing implies the exchange of relevant and particular information between the partners (Mahama, 2006). Sharing information is paramount to reduce information asymmetry and encourage the union of collaborative efforts between the partners (Corsten, Gruen & Peyinghaus, 2011). Even if the cooperation practices can be carried out in different stages of the interfirm relationship, they overlap and are interdependent to strengthen the effectiveness of the relationship.

The cooperation management practices are complementary, so that the conditional use of one practice is associated with the greater use of another (Mahama, 2006). Hence, when cooperation is considered strategically relevant, it stimulates the companies to boost the performance measurement activities. This will be associated with greater information sharing and interaction of the boundary spanners (Mahama, 2006). When the strategic relevance of cooperation and transaction risk increases, the practices complement one another, generating greater value for partner organizations (Mahama, 2006; Dekker et al., 2013).

Dekker et al. (2016) argue that increasing the strategic importance of cooperation results in greater interaction of the boundary spanners and requires greater information sharing between the partners to carry out more activities together, so as to align resources and benefit partners. The performance of the cooperation improves when understanding the objectives and activities of the strategic alliance, since the sharing of information permits correcting actions, reducing uncertainties, promoting learning, aligning companies' expectations and expanding the interaction between those responsible for the cooperation (Mahama, 2006). Thus, when a company aims to achieve its cooperation objectives, this will affect the cooperation management practices and, consequently, the performance of this relationship (Dekker et al., 2016).

The objectives of the cooperation are designed to improve the performance of the companies (Mahama, 2006), and the sharing of information and the interaction of the *boundary spanners* mediate this interference as, when the partner companies aim for multiple objectives, this results in greater exposure to different internal factors which can interfere in the organizational activities and, as a result, co-operation, which requires that greater control, monitoring and communication between the partners from the managers (Dekker et al., 2016). Mediation is expected due to the importance of alignment between the objectives and cooperation management practices, with a view to the performance of the cooperation (Mahama, 2006). Thus, the second hypothesis is formulated:

- **H₂: A positive relationship exists between the objectives of the cooperation and the cooperation performance, mediated by the transaction scope.**

In addition to the cooperation management practices, another factor that can influence the relationship between the objectives and the performance of the cooperation is the extent to which partner activities are overlapping and assist in the knowledge, the transaction scope (Khanna, Gulati & Nohria, 1998).

2.3 Objectives of cooperation, scope of transaction and performance of cooperation

The transaction scope is defined as the breadth of activities developed in organizations, such as research and development, marketing and production, which they agree to carry out in the interfirm cooperative relationships (Varadarajan & Cunningham, 1995). According to Oxley and Sampson (2004), the transaction scope refers to the combination of multiple value chain activities in one cooperation. The transaction scope can be used as a proxy for the commercial value of the cooperation, as investors use it to estimate the future revenue flow of the partner companies (Kalaiganam et al., 2007).

This scope may influence changes in the values of partner companies (Varadarajan & Cunningham, 1995). The cooperations with a broader transaction scope are likely to generate greater revenues and gains than cooperations with a more restrictive scope. Thus, a cooperation that encompasses several sectors evidences a greater financial potential than one that covers only a few sectors (Kalaiganam et al., 2007).

A broad transaction scope may indicate greater commitment of the partners to the cooperation than a narrower transaction scope (Kalaiganam et al., 2007). Organizations with a wider transaction scope are expected to benefit more broadly than those with a narrower scope, as cooperation with a wider transaction scope provides more opportunities for earnings than a narrower scope, which limits the profit capacity (Li, Tang, Okano & Gao, 2013). Cooperative relationships with a wider transaction scope, however, are more complex to administer, as it implies managing coordination and cooperation aspects of the activities carried out in the cooperation to positively impact the performance (Dekker, Donada, Mothe & Nogatchewsky, 2019).

Thus, the companies choose mechanisms to achieve their cooperation objectives and the scope of transaction can mediate this relationship. The mediation effect is expected because the transaction scope portrays the internal environment of the cooperation, the sectors involved that influence the alignment between the objectives and the scope of the partner companies' performance (Dekker et al., 2016). Based on the above, the third research hypothesis is formulated:

- **H₃: A positive relationship exists between the objective of the cooperation and the cooperation performance, mediated by the transaction scope.**

The transaction scope is an important characteristic of the cooperation and establishes the structure (Mishra, Chandrasekaran & McCormack, 2015) and the challenges to manage the cooperation (Dekker et al., 2016). The cooperation with a larger scope tends to provide partners with greater benefits, but exposes them to greater risks and interdependencies, which need to be managed (Dekker et al., 2019). Thus, it is expected that the objectives of the cooperation and its management practices are interrelated (Dekker et al., 2016), and affect the cooperation performance (Mahama, 2006).

Figure 1 shows the theoretical model of the research, highlighting the hypotheses proposed in this study.

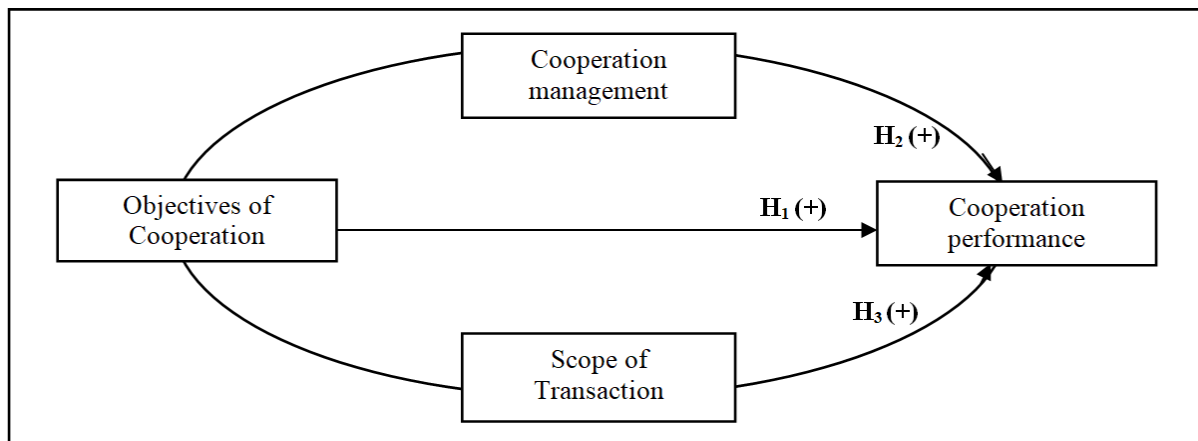


Figure 1. Theoretical research model

Source: elaborated by the authors.

Figure 1 shows the proposed relationships for the three research hypotheses. In accordance with the literature review presented, a positive relationship is expected in the three hypotheses formulated.

3. Research Method

A descriptive research was conducted based on a survey of companies in the Brazilian textile industry. The research population consisted of the Brazilian importing and exporting companies listed at the Ministry of Industry, Trade and Services (MDIC) and the companies participating in the Program for the Internationalization of the Textile and Fashion Industry in Brazil (Texbrasil), the Brazilian Association of the Textile and Clothing Industry (ABIT) in partnership with the Brazilian Agency for the Promotion of Exports and Investments (Apex-Brazil). The choice for these companies is due to their national prominence and because they meet the outlines of the research proposal.

In this search, 1,104 companies were identified. Of these, 773 were located on the social network *LinkedIn*. After identifying the companies, the professionals who act in the positions of President, Chief Executive Officer (CEO), financial director, Chief Financial Officer (CFO), Manager, coordinator and controller were sought on *LinkedIn*. These research subjects were chosen because they are part of the management process and, consequently, of the transactions related to cooperation activities. These were also the research subjects in the study by Dekker et al. (2016), under the argument of their importance in the organizational management process.

Then, the invitation to participate in the research was sent to the 1,122 professionals identified, within the limit of three managers per company. In total, 465 professionals accepted the invitation, who received the link to the search tool through the *Google Forms* platform, and 96 answered questionnaires were returned. Of these, 93 were considered valid, as two respondents did not have the function established for this study, and one respondent indicated the same answer options, which suggests a lack of quality in the answers.

Faul, Erdfelder, Buchner and Lang (2009) point out that the minimum sample size can be calculated using the *G*Power* 3.1.9 software. In this study, one construct (cooperation performance) receives the largest number of arrows, which is four. Thus, the minimum sample should consist of 85 respondents, at a 5% significance level and average effect size. It should be noted that the level of analysis focuses on the companies.

In order to evaluate the effect of interfirm cooperation management practices and the transaction scope on the relationship between the cooperation objectives and cooperation performance, all constructs were measured by means of multiple items, whose assertions were based on previous studies (Appendix A). Each assertion was based on a *Likert* scale or a five-point semantic differential.

The objectives of the cooperation were based on previous studies that identified the strategic reasons for companies to engage in interfirm relationships (Dekker et al., 2016). The authors based this construct on the studies by Contractor and Lorange (1988) and Groot and Merchant (2000). Dekker et al. (2016) identified 14 objectives of cooperation, considered in this research.

As for the transaction scope, the cooperative relationships with a larger scope are more complex to control, requiring greater coordination of the stakeholders (Kalaiganam et al., 2007). Ding et al. (2013) and Dekker et al. (2016) measured the transaction scope based on eight items that identify cooperation activities: research and development, purchases, engineering, production, marketing and sales, after-sales service, knowledge exchange and service provision.

The cooperation management practices used in this study include information sharing and the interaction of boundary spanners and were based on the studies by Dekker et al. (2016). For these authors, information sharing covers six items, which refer to the extent to which partners exchange information on: costs, sales, product development, *marketing* activities, operational performance and recruitment and training.

The interaction of boundary spanners can occur at different organizational levels and the greater the involvement of employees, the greater the likelihood of achieving the intended goals (Dekker et al., 2013). Dekker et al. (2016) measured this construct using three items, questioning how frequently employees consult senior management, active managers and participants in the cooperation to discuss the results.

For the cooperation performance, the research instrument by Dekker et al. (2016) was used. Based on 20 items, they evaluated the cooperation performance, combining financial and non-financial measures. They questioned how relevant different dimensions of performance are, such as costs, profit, cash flow, market share, product quality, customer satisfaction, employee satisfaction. A higher score indicates the use of a broad set of measures to evaluate the cooperation performance.

The most mentioned types of interfirm cooperation in the literature are indicated based on the definitions by Eiriz (2001) and Meira, Kartalis, Tsamenyi and Cullen, (2010), with six selection alternatives. The respondent could select several types, as an organization may engage in different forms of cooperation, in addition to the option to include another type of cooperation not mentioned. These types were used as control variables to distinguish the types of cooperation and their influence on the cooperation.

The research instruments used by the authors mentioned were translated from English into Portuguese and, afterwards, the back-translation was elaborated to validate the translation. An expert researcher on the theme reviewed the instrument to validate the translation and propose any adjustments. To eliminate possible inconsistencies and mitigate comprehension difficulties, the questionnaire was submitted to three researchers in the area and, after their considerations, some semantic adjustments were made.

Data collection was performed from October 2018 to May 2019. The Structural Equations Modeling technique was applied to the collected data, using *SmartPLS* version 3.0. To test the mediations proposed in the hypotheses, *bootstrapping* was used as recommended by Hayes (2009), considering that this test does not presuppose the normal distribution of the sample and, therefore, is superior to Sobel's test. According to the author, *bootstrapping* creates an empirical representation of the distribution of the indirect effect, with resampling to reproduce the population and provide greater robustness to the results.

4. Analysis Of Results

4.1 Characteristics of survey respondents and companies

Table 1 shows the profile of the survey respondents, with emphasis on gender, age group, education, academic background and function/position they occupy in the company.

Table 1.

Profile of survey respondents

Gender	Qty.	%	Age Range	Qty.	%
Male	76	82%	Under 30 years	9	10%
Female	17	18%	From 31 to 40 years	27	29%
Total			From 41 to 50 years	35	38%
Education	Qty.	%	From 51 to 60 years	15	16%
Secondary Education	3	3%	From 61 to 70 years	7	7%
Higher Education	25	27%	Total	93	100%
Specialization or MBA	51	55%	Function/Position	Qty.	%
Master's or Doctorate	14	15%	Director	32	35%
Total	93	100%	Manager and Coordinator	56	60%
Academic Background	Qty.	%	Controller	4	4%
Business	68	73%	Not declared	1	1%
Other areas	23	25%	Total	93	100%
Not declared	2	2%			
Total	93	100%			

Obs. Business (Administration, Accountancy, Economics). Other areas (Teaching Diploma in Languages, Law, Information Technology, Physics, Architecture, Chemistry and Engineering).

Source: survey data.

As observed in Table 1, 82% of the respondents are male. The respondents' age range is concentrated between 41 and 50 years, representing 38% of the sample, and 29% is between 31 and 40 years of age. Regarding the respondents' level of education, 27% hold a higher education degree, 55% a *lato sensu* postgraduate degree (specialization), 15% a *stricto sensu* postgraduate degree (master's or doctorate). Of the three respondents who indicated secondary education, two did not declare academic training and one indicated technological training, being thus classified under other areas. It is noteworthy that 73% of the respondents have an educational background in the business area.

The position or function with the largest number of respondents in this survey was manager and coordinator, totaling 56 respondents, representing 60% of the sample analyzed, followed by director with 35%. The average length of time in the position or function is 10 years, which indicates that the respondents have worked in these companies for some time. The respondents' profile suggests that they meet the necessary conditions to answer the questions of the research instrument.

Table 2 shows the companies' main economic activities, in addition to their classification by size and market.

Table 2.

Activity segment and company classification

Economic activity	Qty.	%	Market	Qty.	%
Industry	82	88%	Regional	2	2%
Trade	10	11%	National	29	31%
Services	1	1%	National and International	62	67%
Total	93	100%	Total	93	100%
Average annual turnover				Qty.	%
Less than or equal to R\$ 2.4 million				10	11%
More than R\$ 2.4 million and less than or equal to R\$ 16 million				14	15%
More than R\$ 16 million and less than or equal to R\$ 90 million				31	33%
More than R\$ 90 million and less than or equal to R\$ 300 million				23	25%
More than R\$ 300 million				15	16%
Total				93	100%

Source: survey data.

In Table 2, the economic activity that stands out in the research sample is the industry, which corresponds to 88%. The average annual turnover in 33% of companies is in the range between more than R\$16 million and less than or equal to R\$ 90 million, 25% between more than R\$ 90 million and less than or equal to R\$ 300 million and 16% has an annual turnover of more than R\$300 million. This indicates that 74% of these companies are medium to large, according to parameters of the National Bank for Economic and Social Development (BNDES, 2015). In addition, 67% of the companies operate in both the national and international markets, confirming that the Brazilian textile sector stands out internationally (ABIT, 2017).

Regarding these companies' time of operation, 61% have been active between 11 and 50 years, 29% have been operating in the market for more than 50 years and, of these, one company has 139 years and only 10% has existed for up to 10 years. These companies' location is concentrated in the South and Southeast, with 46% and 39%, respectively. As for the number of employees, about 36% have between 100 and 499 employees and 39% more than 500 employees, confirming that the companies in the sample are medium and large.

As for the types of cooperation they practice, 60 companies indicated supply chain, 57 outsourcing, 26 joint production, 10 franchises and 7 joint ventures. On average, the respondents pointed out that the company engages in more than one type of cooperation, especially the supply chain and outsourcing, while the least practiced is the joint venture. This indicates that the relationships between customers and suppliers and the hiring of another company to perform activities are the most practiced types.

4.2 Measurement model

In the measurement model, the (convergent and discriminant) validity and the (internal and composite) reliability of the measurements of the constructs were evaluated (Hair Jr, Black, Babin, Anderson & Tatham, 2014). In the original model, none of the constructs was able to reach the minimum values for convergent validity (Average Variance Extracted - AVE), above 0.5, and some indicators showed an internal factor loading below 0.4. Thus, the indicators were excluded until the constructs reached the minimum values for the AVE and the internal factor loading. Three test rounds and exclusions of indicators were necessary to validate the reliability of the constructs.

After the tests and the exclusion of variables that did not meet the model's reliability criteria, the following remained: 10 items in cooperation objectives; 6 in transaction scope; 6 in cooperation management practices; and 13 in cooperation performance (Appendix A). The Composite Reliability and AVE of the adjusted model are presented in Table 3. After excluding items from the theoretical model, the AVE reached the minimum values recommended in the literature (Hair Jr et al., 2014).

Table 3.

Adjusted model

Constructs	Composite Reliability	AVE
Objectives of Cooperation	0.913	0.515
Transaction scope	0.862	0.512
Cooperation Management Practices	0.857	0.502
Cooperation Performance	0.928	0.503

Source: survey data.

The factor loadings are superior to 0.5 and no indicator that is highly correlated with another indicator is present in the adjusted model. Next, the discriminant validity of the first and second-order latent reflexive variables was verified, which presents the correlations between the variables and the square root of the AVE diagonally. The correlation between the latent variables should be lower than the square root of the AVE to achieve discriminant validity (Fornell & Larcker, 1981). Table 4 shows the discriminant validity of the adjusted model for the first and second-order latent variables.

Table 4.

Discriminant analysis of the first and second-order latent variables

First-order latent variables	1	2	3	4
1. Objectives of Cooperation	0.718			
2. Transaction scope	0.578	0.715		
3. Cooperation Performance	0.459	0.618	0.709	
Second-order latent variable				
4. Cooperation Management Practices	0.422	0.566	0.473	0.709
Composite Reliability (CR)				0.812
Average Variance Extracted (AVE)				0.683

Source: survey data.

Table 4 shows that the latent variables of the measurement model have a higher square root of the AVE than the correlations with the other latent variables. After calculating the second-order latent variable, it is noticed that the CR and AVE are higher than the minimum limit, confirming the validity of the construct. The validation tests of the measurement model permit analyzing the structural model.

4.3 Structural model

The structural model analysis was performed in two stages. First, we analyzed R^2 , which the variance percentage of a dependent latent variable that is explained by the independent variables (Hair Jr et al., 2014). *Bootstrapping* was calculated with 5,000 subsamples. To validate the research hypotheses, initially, the structural model was tested. To confirm the results found, the control variable was included in the structural model. Table 5 shows the results of the structural model with the control variable.

Table 5.

Result of the structural model

Structural relationships	Hypotheses	Structural coefficient	T-value	P-value	F ²	R ²
OC→CP	H1 (+)	0.115	1.293	0.196	0.016	
OC→CM→CP	H2 (+)	0.092	1.986	0.047**	-	0.424
OC→TS→CP	H3 (+)	0.255	4.061	0.000***	-	
Direct Relationships						
Structural relationships		Structural coefficient	T-value	P-value	F ²	R ²
OC→CM		0.414	3.965	0.000***	0.224	0.219
CM→CP		0.223	2.346	0.019**	0.056	0.424
OC→TS		0.575	7.653	0.000***	0.500	0.324
TS→CP		0.443	4.365	0.000***	0.192	0.424
Total Relationship						
OC→CP		0.462	5.162	0.000***	0.016	0.424
Control Variables						
TC→CM		0.241	0.915	0.360	0.076	-
TC→TS		0.072	0.424	0.672	0.008	-
TC→CP		-0.192	0.979	0.328	0.062	

Obs.: significance at ** 5% and *** 1%.

Legend: OC = Objectives of Cooperation; CM = Cooperation Management Practices; TS = Transaction Scope; CP = Cooperation Performance; TC = Types of Cooperation.

Source: survey data.

According to Table 5, all relationships have signs consistent with the formulation of the research hypotheses, that is, a positive sign. No support is found for the statistical acceptance of hypothesis H₁. Hypotheses H₂ and H₃ confirm the mediation. To assess whether the mediation is complete or partial, one should check the direct, indirect and total effects. The direct relationship of H₂ involves the objectives and performance of the cooperation and was not statistically significant. The indirect relationship between the objectives and performance of the cooperation, mediated by the cooperation management practices, was statistically significant (p<0.05). The total effect between the objectives and performance of the cooperation was statistically significant (p<0.01). Thus, support is found for the statistical acceptance of H₂ and mediation is total.

With regard to hypothesis H₃, the direct relationship involves the objectives and performance of the cooperation, but was not statistically significant. The indirect relationship between the objectives and performance of the cooperation, mediated by the transaction scope, was statistically significant (p<0.01). The total effect between the objectives and performance of the cooperation was statistically significant (p<0.01). Thus, H₃ is statistically accepted and the mediation is total.

As for the control variable, no statistically significant relationship was found, which indicates that the types of cooperation the companies practiced do not statistically influence the other cooperation elements investigated. The inclusion of this variable in the model, however, intensified the significance of the relationships proposed in this study.

4.4 Discussion of the results

The research results indicate that support is found for the statistical acceptance of hypotheses H_2 and H_3 formulated in the theoretical model. Hypothesis H_1 , which predicts a positive relationship between the objectives and performance of the cooperation, has not been confirmed. This indicates that the impact of the objectives on the performance does not happen directly, considering that the mediations of hypotheses H_2 and H_3 were accepted.

The objectives of the cooperation are the strategic reasons for companies to participate in the interfirm cooperation (Dekker et al., 2016). The interfirm relationships seek to reduce costs, access new markets and technologies, and maximize profits or reduce risks (Groot & Merchant, 2000). Dekker et al. (2016) found a significant and positive relationship between the objectives and performance of the cooperation, and concluded that the cooperation is relevant because it causes positive impacts on the performance of the cooperation, contrary to the results found in this research.

In the industrial enterprises from the textile sector surveyed, the managers evaluate cooperation as strategically important. Nevertheless, for the companies to achieve the desired objectives of the strategic alliance, the cooperation management practices and the transaction scope need to be aligned. For the companies in the sample, the strategic relevance of the cooperation positively affects the performance of the cooperation if it is associated with the sharing of information, the interaction between partners and the activities developed between the partners of the cooperation, a fact that justifies the rejection of H_1 .

The increase in the strategic importance of the cooperation objectives depends on the alignment between the interests and actions of the partners, which implies the need to coordinate and control the cooperation management practices (Reuer, Ariño, 2007; Dekker et al., 2016). According to the importance of these relationships for the partners, there will be a need for access to relevant information, which influences the increased sharing of information. The demand for information requires greater engagement of managers to manage these relationships, coordination of actions, recognition of areas that need improvement and alignment of expectations, goals and contributions between the partners (Dekker et al., 2013).

The interdependence between the partners' interests, one of the premises of the Theory of cooperation (Deustch, 2011), implies that the objectives of the cooperation relate positively to the cooperation management practices, as well as between these practices and the performance of the cooperation. In addition to being influenced by the objectives of the cooperation, the cooperation management practices influence the performance of the interfirm relationship. The positive relationship found in this study between the objectives and cooperation management practices reveals the importance perceived by the respondents that information sharing and interaction between partners are fundamental to achieve the desired performance, and the greater this interaction, the greater the positive impact on the interfirm relationship.

Besides generating revenues and reducing costs, interfirm cooperation helps in the exchange of knowledge and information between partners (Kogut, 1988). Thus, the management of interfirm cooperation needs to join the partners through the interaction of the boundary spanners, which implies the provision of information that favors decisions aligned with the partners' interests (Mahama, 2006; Dekker et al., 2013). Information sharing helps the stakeholders in resolving uncertainties, achieving goals and executing the cooperation (Mahama, 2006; Dekker et al., 2013).

In this sense, the cooperation management practices should be aligned with the objectives of the cooperation because they positively impact the performance of the interfirm relationship (Mahama, 2006; Dekker et al., 2016). The mediation test of hypothesis H_2 , which predicts a positive relationship between the objectives and performance of the cooperation, mediated by the cooperation management practices, indicated total mediation.

The strategic importance of cooperation perceived in the surveyed companies is associated with greater information sharing and interaction of the boundary spanners, greater use of cooperation management practices, which drives the use of performance measurement mechanisms (Mahama, 2006), which positively affect the cooperation performance. Moreover, when the objectives of the cooperation are relevant, like in this study, the cooperation practices complement one another to reduce the risks involved, generating greater value for the partners (Dekker et al., 2013).

The result found in this research regarding information sharing differs from the findings by Mahama (2006) though. The cooperation dimensions the author investigated are joint problem solving, willingness to adapt to changes, restriction of power use and information sharing, only three of which (problem solving, willingness to adapt to changes, restriction of power use) showed a direct association with the performance of the cooperation. The relationship between information sharing and cooperation performance is indirect. The investigated company managers' perception of the importance of sharing relevant information between the partners to achieve the intended goals can explain this result.

Besides the cooperation management practices, another factor that influences the relationship between the objectives and performance of the cooperation is the extent to which the activities developed overlap and generate knowledge among the partners, the transaction scope (Khanna et al., 1998). Hypothesis H₃, which predicts a positive relationship between the objectives and the performance of the cooperation, mediated by the transaction scope, indicated total mediation. This indicates that, as the relevance of the cooperation objectives and the inclusion of activities in the cooperation increase, the scope becomes larger (Reuer & Ariño, 2007). Cooperation with a wider transaction scope increases the possibility of extracting benefits, but also the partner's risk of exposure, which needs to be managed (Dekker et al., 2019).

A wider transaction scope signals that more activities are developed in cooperation, and this involvement tends to generate greater financial gains (Kalaighnam et al., 2007). Organizations with a wider transaction scope have more benefits than those with a narrower scope, as a cooperation with a wider transaction scope generates more earnings opportunities (Li et al., 2013). This explains the evidence found in this study, in that the greater the extent of the activities carried out in the cooperation, the greater will be the effect size between the objectives and the performance of the cooperation.

The mediation effect is also confirmed because the transaction scope portrays the internal environment of the cooperation, the sectors involved in this relationship that interfere positively in the alignment between the objectives and the performance of the partner companies (Dekker et al., 2016). This explains the positive influence of the cooperation objectives on the performance of the cooperation, mediated by the transaction scope in the analyzed companies, in line with the study by Dekker et al. (2016).

The performance of the cooperation was positive, which suggests that the partners' objectives have interfaces. Thus, when the objectives of the partners are interrelated, a relationship of positive interdependence exists for the achievement of the goals, which results in a positive impact on the performance of the cooperation, in accordance with the Theory of Cooperation (Deustch, 2011).

5. Final Considerations

Objective: This study analyzed the effect of the cooperation management practices and transaction scope on the relationship between the objectives and the performance of the cooperation in enterprises from the textile industry. The results indicated that the relationship between the objectives and the performance of the cooperation is mediated by the cooperation management practices and the scope of the transaction. Although the relationships with both mediations were statistically significant, the effect size of the cooperation management practices and the transaction scope in relation to the cooperation performance was different. The effect size of the cooperation management practices was low (0.056), while the transaction scope was high (0.500).

Thus, the greater the interaction among the stakeholders and the sharing of information, the greater will be the association between the objectives and the performance of interfirm cooperation in the companies surveyed. In addition, for the managers of these companies, the activities developed in the cooperation may be more relevant than the sharing of information and the interaction of the boundary spanners in the performance of interfirm cooperation. This is due to the fact that most of these companies practice different combinations of cooperation forms, which requires more operations in the interfirm relationships.

The study findings contribute to the literature by providing evidence on the effects of the cooperation management practices and the transaction scope in the relationship between the objectives and performance of interfirm relationships. The findings indicated that the alignment between the objectives and the interfirm cooperation management practices, as well as the transaction scope, result in a better performance of these relationships. Another contribution lies in the understanding of the phenomenon based on the Theory of Cooperation, which is centered on the alignment of strategic objectives among the participants of interfirm relations, which directs the partners' effort of the partners to the mutual goals (Mahama, 2006).

The practical contribution of the study lies in the relevance of the theme in relation to the strategy the organizations adopt to obtain competitive advantages and provide value creation among the companies participating in the cooperation. Textile organizations can promote cooperation as a strategy to meet market demands, as part of an innovative and technological network (Bruno, 2016), assisting in companies' strategic competitiveness.

The limitations imposed on the design of this study offer opportunities for new research on interfirm cooperation. Future studies can analyze the cooperation from the perspective analyzed here in other contexts than the textile sector, aiming to compare the results with those of this research. They can also broaden the analysis of other cooperation management practices in the interfirm relationship, such as reward and *feedback* systems. Interfirm cooperative relationships also entail transaction risks for their partners, which can affect the performance and success of these relationships. Thus, for the sake of future research, further investigation of the transaction risks and their impact on interfirm cooperation is recommended.

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Appendix A. Research Instruments

1. Objectives of the Cooperation (OC) (Dekker et al., 2016)

Indicate how important the objectives below are for your company to participate in cooperation, on a scale from 1 (not important) to 5 (highly important).

- OC1.Stabilization of gains (*)
- OC2.Investment sharing (*)
- OC3.Access to cheap labor (*)
- OC4.Access to raw materials or semi-finished products (*)
- OC5.Access to local markets
- OC6.Reduction of competition
- OC7.Reduction of business risk
- OC8.Access to technology and/or *know-how*
- OC9.Learn management skills
- OC10.Access to another company in another industrial sector
- OC11.Overcome barriers (trade/investment)
- OC12.Increase in productive capacity
- OC13.Learn local business practices
- OC14.Access to political or business networks

Note: (*) Items removed from data analysis.

2. Scope of transaction (ST) (Ding et al., 2013; Dekker et al., 2016)

Indicate to what extent cooperative operations include the activities below, on a scale from 1 (little) to 5 (very).

- ST1.Research and development
- ST2.Engineering
- ST3.Purchasing
- ST4.Production
- ST5.Marketing and sales
- ST6.After-sales service (*)
- ST7.Knowledge exchange
- ST8.Service provision (*)

Note: (*) Items removed from the data analysis.

3. Cooperation management practices (CM) (Dekker et al., 2016)

Information sharing (CM_IS)

Inform how much information your company and its partner exchange about the items below, on the scale from 1 (little information) to 5 (a lot of information).

- CM1_IS.Costs (*)
- CM2_IS.Sales
- CM3_IS.Product/technology development (*)
- CM4_IS.Marketing activities
- CM5_IS.Operational *performance* (*)
- CM6_IS.Recruitment and training

Note: (*) Items removed from the data analysis.

Interaction of *Boundary Spanners* (CM_BS)

Point out how often employees meet to consult those mentioned below, on the scale from 1 (do not consult) to 5 (periodically).

- CM1_BS.Senior management of cooperation
- CM2_BS.Active managers in cooperation
- CM3_BS.Employees who work in cooperation

4. Cooperation Performance (CP) (Dekker et al., 2016)

Inform how important the below items are to assess the cooperation performance, on the scale from 1 (not important) to 5 (highly important).

- CP1.Profit (*)
- CP2.Sales (*)
- CP3.Cash flow
- CP4.Costs (*)
- CP5.Market share
- CP6.Quality of products/services (*)
- CP7.Customer satisfaction (*)
- CP8.Used (production) capacity (*)
- CP9.Labour productivity
- CP10.Delivery time (*)
- CP11.Success of technology transfer
- CP12.Number of new product introductions
- CP13.Employee loyalty
- CP14.Employee training
- CP15.Number of improvements in products or services
- CP16.Timely introduction of products
- CP17.Cost per employee
- CP18.Quality of after-sales service
- CP19.Improvements in (production) systems
- CP20.Employee satisfaction

Note: (*) Items removed from the data analysis.

5. Cooperation types (CT) (*Eiriz, 2001; ** Meira et al., 2010)

Indicate the type(s) of interfirm cooperation your company practices.

- CT1.Supply chain (agreement between the producer company and its suppliers for the preparation of the product intended for the final consumer)**.
- TC2.Joint production and/or product development (when two or more companies jointly produce the same products to meet market needs)*.
- CT3.Franchises (a process in which one company (franchisor) grants another company (franchisee) the right to exploit a trademark, product or technique it owns under certain contractual conditions)**.
- CT4.Outsourcing (a process in which a company hires another company to carry out external activities the contracting company could carry out internally)*.
- CT5.*Joint ventures* (when two or more partner companies form a new company to meet a common goal)**.
- CT6.Other. Specify: _____