Does the information timeliness and trust promote interorganizational cooperation?

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Abstract
This study analyses the influence of timeliness of management information and trust in the partner in interorganizational cooperation. Furthermore, it verifies whether sharing information mediates the relationship of trust in the partner with interorganizational cooperation. A *survey* was conducted with 203 managers of companies associated with two Brazilian technology parks, and for data analysis, partial least squares structural equation modeling was applied. The results show that timeliness management information influences the interorganizational relationship established in technology parks to precede trust in the partner and different cooperative behaviors. It is concluded that the two dimensions (speed and frequency) of the timeliness of management information act in different but complementary ways in promoting quality (trust) and the success of the relationship (cooperation). This finding may be important in defining and reviewing the characteristics of management control systems adopted in the relationship. Partial mediation of information sharing was identified in the relationship of trust in the partner with the other dimensions of interorganizational cooperation, which indicates that information sharing promotes the engagement of partners in other forms of cooperation.

Keywords: Timeliness of management information, Interorganizational cooperation, Trust in the partner, Information sharing, Technology park.

1. Introduction

The literature presents a stream of research on interorganizational relationships in different contexts (Dekker, 2004; Caglio & Ditillo, 2021). These relationships present control problems and involve appropriation and cooperation risks (Caglio & Ditillo, 2008). Control and risk management issues can be mitigated in various ways, such as using cost and control information or trusting the partner (Rad, 2017). Among the purposes of control in an interorganizational context, there is the creation of conditions that seek to motivate partners to achieve expected results, engaged in acting cooperatively (Dekker, 2004). For Mahama (2006), cooperation between members is essential for the success of a partnership, and management control systems (MCS) play a relevant role in promoting interorganizational cooperation.

MCS must provide information about the relationship to promote trust in the partner and interorganizational cooperation to manage partnership relationships between companies. Given that interorganizational cooperation is usually the purpose of creating links between companies, trust acts as a mechanism that can motivate social exchanges and help align interorganizational objectives. To scale the design of MCS, Chenhall, and Morris (1986)

highlight four informational characteristics perceived to be useful for management: scope, timeliness, aggregation, and integration. The timeliness of the management information provided by the MCS is the focus of this study, which investigates a partnership established to boost innovation. Due to its dynamism, it requires MCS with timely information. The timeliness of MCS reflects the ability to respond quickly to situations likely to be influenced by the punctuality of the system, defined by the delivery of requested information and the frequency of information provided, collected quickly and in a timely manner (Chenhall & Morris, 1986).

When investigating the timeliness of the information provided by the MCS, the usefulness perceived by the managers regarding the timely/punctual information is assessed (Chenhall & Morris, 1986). In the interorganizational context, the frequency and speed of relationship information provided by the MCS to the companies involved in the relationship are considered. The timeliness of MCS information in the relationship between exporter and intermediary, investigated by Velez, Sanchez, Florez, and Alvarez-Dardet (2015), showed high relevance as it precedes characteristics of the quality of the interorganizational relationship, such as trust and cooperation. This study aims to analyze the influence of the timeliness of management information (Chenhall and Morris, 1986) and trust in the partner in interorganizational cooperation, according to the taxonomy of Heide and Miner (1992). Furthermore, it verifies whether sharing information mediates the relationship of trust in the partner with interorganizational cooperation.

The interorganizational literature highlights the timeliness of sharing management information but is silent on the timeliness of processing and providing MCS information. Mason-Jones and Towill (1997) justified the importance of timeliness in information sharing because information loses its value, meaning, and relevance over time. The information allows companies to learn about dynamics promptly by identifying threats and opportunities from partners in a timely manner (Mason-Jones & Towill, 1997). Timeliness consists of the ability that leads companies to promote the performance of the interorganizational relationship via mechanisms and skills to deal with informed changes (Mason-Jones & Towill, 1997). In the interorganizational relationship, MCS are established that use technology to integrate and share information that crosses the physical limitations of the company. Such information supply systems are critical factors for the success of the collaboration between companies (Nicolaou, Sedatole & Lankton, 2011; Pazetto & Beuren, 2022).

Trust, in turn, is the link between forms of governance of networks of companies with the behavior of the parties during the processes of social interactions and cooperation that characterize relationships, with MCS and trust being complementary mechanisms to manage collaboration between companies. (Barretta & Busco, 2011). In the context of strategic alliances, Das and Teng (1998) highlighted the importance of building trust and control mechanisms as ways to pursue and generate trust in cooperation between partners. The literature points out that the basis for developing trust is competence, benevolence, and integrity in the relationship. Together, they explain trust comprehensively (Mayer, Davis & Schoorman, 1995). Seppänen, Blomqvist, and Sundqvist (2007) emphasize that studies on interorganizational trust generally take place in technology-intensive contexts, where trust permeates knowledge-based relationships.

Business alliances involve partners who share objectives in which cooperation is fundamental (Das & Teng, 1998). According to Mahama (2006) and Luiz and Beuren (2021), cooperation as a social construct is widely used in the literature. Interorganizational cooperation is analyzed in the social interactions between companies that are expressed in the dimensions: flexibility, information sharing, joint problem solving, and restriction on the use of power. This taxonomy is in line with the proposal by Heide and Miner (1992), according to

the precepts of the Cooperation Theory (Deutsch, 1949; Tjosvold, 1984). Cooperation proved to be inherent to social interactions (Heide & Miner, 1992), to the performance of business alliances (Mahama, 2006), motivated by trust in the partner (Nicolaou et al., 2011) and intensified by communication between the parties in the relationship (Seppänen et al., 2007).

In this study, the interorganizational partnership focused on the relationship between technology parks and associated companies, a collaborative arrangement very present in Brazil. Technology Parks act as promoters of the culture of innovation based on the transfer of knowledge and technology to increase the production of wealth in their region (Anprotec, 2020). The context in which the literature in the management area is still embryonic. Cooperation Theory argues that individual goals become interrelated under a cooperative social situation (Deutsch, 1949). In the case of technology parks, it is postulated that the common objective is the constant search for innovation, which can be driven by the synergistic context of the park and the potential for innovation resulting from social interactions (Pazetto & Beuren, 2022).

Dekker (2004) postulates that several criticisms are given to economic approaches to understanding the management of interorganizational relationships, mainly due to their lack of dynamism since they are generally immersed in a rich and influential social context. Caglio and Ditillo (2021) highlight that there are still opportunities for advances in this line of research in terms of interdisciplinarity and new theoretical lenses. In this sense, this research contributes to the advancement of studies in MCS as it investigates social aspects resulting from the controls used in interorganizational relationships. It also contributes to clarifying divergent results in the literature of the constructs used. MCS researchers have studied interorganizational relationships in different contexts (Rad, 2017), but exploring relationships between technology park companies is an avenue of study to be explored.

2. Theoretical framework and hypotheses

The multidirectional causalities on trust and controls observed in the literature led Inkpen and Curall (2004) to propose that trust influences the selection of controls and that controls, in turn, have the potential to influence trust. The first proposition emphasizes that trust is essential in joint work, as it involves interdependencies between partners. To avoid individualistic behavior in relationships, companies use means to manage such situations, such as control mechanisms and contracts (Mayer et al., 1995). In the second proposition, it was evident in Rad (2017) that, in a review of previous studies, trust is often found in collaborative relationships in different ways, considered as a relevant mechanism to deal with control problems in organizational studies. Arguments in line with Inkpen and Curall's (2004) statement that trust and controls are concepts that in practice are self-promoting evolve jointly as partners perform collaborative processes. These panoramas indicate positive associations between controls and interorganizational trust.

MCS concentrate the main sources of information for organizations and interorganizational relationships and operate as a means of contact between the parties to the relationship. It is inferred that the exchange of information is a source of interaction between the parts of interorganizational relationships. Barretta and Busco (2011) postulated that the lack of interactions between the partners in the relationship may suggest that formal mechanisms, such as MCS, are necessary to build the relationship of trust. Proactive communication and information exchange foster trust in the partners. Communication about the relationship demonstrates credibility and promotes a flow of information between partners, providing continuous interactions and a trusting environment (Das & Teng, 1998).

Nicolaou et al. (2011) found in their research that the level of integration of information systems influences the use of interorganizational information for coordination and control

purposes, which were associated with trust in the relationship, positively and negatively, respectively, and trust was shown to be strongly associated with the alliance performance. Significant but ambiguous results prompt further research and demonstrate the influential role of controls, in the form of information systems, in trust in the partner. Velez et al. (2015) found that the timeliness of MCS produces positive and high effects on trust, cooperation, adaptation, commitment, and satisfaction with the cooperation between supplier-intermediary. The high timeliness of the information provided by the MCS brought positive results. It was associated with the quality of the relationship between supplier-intermediary in Velez et al.'s (2015) study. Timeliness was considered a construct that added frequency and speed of providing information to managers and proved relevant for trust in the partner. To advance in the literature, it is proposed to investigate the timeliness under these two characteristics in the context of technology parks to promote trust in the partner, which leads to proposing:

H1. There is a positive influence of the timeliness of management information on trust in the partner.

In interorganizational relationships, parties are often concerned with problems of appropriation and cooperation that may arise (Caglio & Ditillo, 2008; Rad, 2017). The problem of cooperation stems from the concern that the sides of the relationship are autonomous. This configuration can encourage them to act against the common interest, which requires control mechanisms to align the partnership's objectives (Caglio & Ditillo, 2008). To avoid opportune behavior, organizations use control mechanisms, contracts, reward systems and align structural aspects (Mayer et al., 1995). The literature recognizes that when seeking to solve control problems and manage risks in interorganizational relationships, organizations can rely on governance structures, use adequate contracts and accounting information (Rad, 2017). The design of MCS is an important aspect of the structure that governs interorganizational relationships, especially given the information that is intended to be collected and provided.

Trust in partner cooperation was the object of analysis in the study by Das and Teng (1998). The authors note that more effective control mechanisms should be employed in interorganizational relationships to maximize trust in partner cooperation. The role of interorganizational controls as informational characteristics was investigated by Velez et al. (2015). Cooperation was considered a form of relationship quality, positively influenced by the scope and timeliness of the information provided by the MCS. Velez et al. (2015) concluded that informational characteristics are important in developing and maintaining long-term relationships between international partners. Still, not all characteristics were equally important, and timely information was highlighted.

In the supply chain, Mahama (2006) found evidence that MCS in the form of a performance measurement system (PMS) directly affected cooperation in the relationship, in the dimensions of information sharing, joint problem solving, and flexibility, and indirectly in the restrictions on the use of power. As a component of the MCS, the socialization process demonstrated a direct influence on information sharing. MCS and cooperation were partially related to relationship performance. Beuren and Dal Vesco (2021) found no evidence in the fuel franchise segment that supported a positive influence of PMS and socialization mechanisms on cooperation. These results differ from the findings of Mahama (2006). Therefore, evidence from the literature (Mahama, 2006; Velez et al., 2015; and Beuren & Dal Vesco, 2021) instigate further research on the role of MCS in interorganizational cooperation, which motivated the following hypothesis:

H2: There is a positive influence of the timeliness of management information on

interorganizational cooperation in the dimensions of information sharing (H2a), flexibility (H2b), joint problem solving (H2c), and restriction on the use of power (H2d).

Trust in the partner reflects in higher levels of commitment to the goals of the relationship (Inkpen & Curall, 2004), which can trigger cooperative behaviors to achieve the goals of cooperation. The level of trust affects the risk that the trusting party is willing to face in the relationship. In contrast, the risk is associated with the good and bad outcomes that one can achieve (Mayer et al., 1995). That is, trust is associated with risk, which reflects the vulnerability and exposure of the relationship partners. For Das and Teng (1998), trust in cooperative behavior patterns comes from trust in the relationship.

Rad (2017) investigated interorganizational relationships in the banking segment regarding the control of appropriation and cooperation problems. When it comes to cooperation, the main risk is poor overall performance. The author concluded that the control practices that the interorganizational network must employ to achieve superior performance in the relationship is the validation of relational trust, an aspect that ensures reciprocity, goodwill, and information sharing. Martins, Faria, Prearo, and Arruda (2017), in the analysis of the relationship between cooperatives and their centrals, identified that trust in the relationship and commitment lead to greater cooperation between the parties. In this perspective, the following hypothesis was formulated:

H3: There is a positive influence of trust in the partner on interorganizational cooperation, in the dimensions of information sharing (H3a), flexibility (H3b), joint problem solving (H3c), and restriction on the use of power (H3d).

Among the advantages of an interorganizational relationship based on trust, trust facilitates communication and information sharing (Seppänen et al., 2007). People in cooperative situations communicate about tasks to provide support and for division of labor (Deutsch, 1949; Tjosvold, 1984). Partners communicate, influence each other, and exchange resources in carrying out their activities (Tjosvold, 1984). McKnight, Choudhury, and Kacmar (2002), observed in e-commerce that trust is essential for sharing personal information. Information sharing refers to the willingness of participants to exchange important information about the relationship, usually exclusive information, developing a shared sense of transactions (Heide & Miner, 1992), which points to other cooperative behaviors, such as joint problem-solving. According to the authors, apart from information sharing, other aspects of cooperation are not specified in contractual agreements (Heide & Miner, 1992) due to their informality. This suggests the relevance of information sharing in determining the other cooperation dimensions.

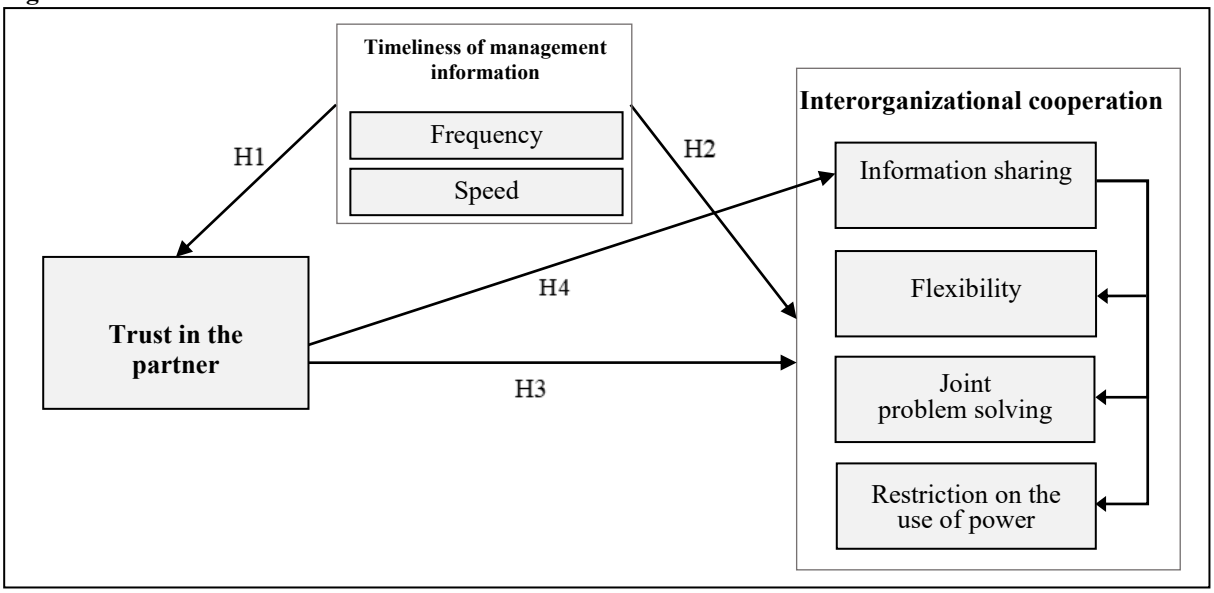
Heide and Miner (1992) point out that the interaction between companies favors cooperation. According to Seppänen et al. (2007), the interrelationships between trust and cooperation, trust and communication, trust and performance are reciprocal. This point denotes a certain duality in the literature but ensures a positive association between such variables. Generally, the forms of cooperation are positively associated, although they are not necessary conditions for the others to occur (Mahama, 2006). With this, it is proposed that greater information sharing is a way to strengthen the interaction between companies, which can favor cooperation in the relationship, a behavior influenced by trust in the relationship (e.g., Martins et al., 2017). Thus, it is postulated that information sharing explains the positive influence of trust on other forms of interorganizational cooperation.

H4: There is an indirect and positive influence of trust in the partner in interorganizational cooperation, through the level of information sharing, in the flexibility dimensions (H4a),

joint problem solving (H4b), and restriction on the use of power (H4c)**.**

Based on the literature, it is proposed to investigate the structural model in Figure 1.

Figure 1. Theoretical research model



3. Research Methodology

3.1 Sample and data collection

This study investigates organizations associated with technology parks, and the study respondents are their strategic level employees. The research population comprises managers from 506 organizations associated with Porto Digital (298) and the São José dos Campos Technology Park (PqTec SJC) (208). To measure constructs such as interorganizational trust, it was recommended by Seppänen et al. (2007) to use multiple informants from each organization. Thus, the study population comprises 2,397 employees from 506 organizations linked to the parks.

Contact with managers took place via the *LinkedIn* professional network in search of positions: managers, coordinators, supervisors, directors, or partners. Invitations were sent to 1,071 managers of the organizations Porto Digital and 1,236 managers of PqTec SJC between the end of 2018 and the beginning of 2019. For the 954 managers who accepted the invitation, the questionnaire was sent by *Survey Monkey*, which resulted in 203 valid responses, 99 managers of organizations associated with PqTec SJC, and 104 of Porto Digital.

The parks were selected because they are among the largest in Brazil, are consolidated, both have been in operation for more than 10 years and have similarities for comparison. Porto Digital, located in Recife in the state of Pernambuco, is among the oldest in the country, has high national recognition, has more expressive numbers than other parks in the country, and is characterized by its integration with the university. The PqTec SJC, in the state of São Paulo, is more focused on the aeronautics and defense segment, a well-defined niche, has a smaller number of resident companies, and has high government influence. This park is associated with several more traditional companies, has mechanisms integration, such as the park's incubator and shared service centers.

3.2 Framing of the study variables

To verify the dimensionality of the variables collected through a multiple scale questionnaire, a confirmatory factor analysis (CFA) based on correlation was conducted to define the groupings of the variables. The CFA was performed with all the statements that measure the constructs connected to each other, as Brown (2015) recommended. The procedure resulted in the timeliness of management information as a two-dimensional construct, segregated in speed and frequency of the information provided by the MCS, trust in the partner as a one-dimensional construct, and interorganizational cooperation as a four-dimensional construct. The internal consistency analysis was ensured by the fact that *Cronbach's alpha* was greater than 0.70.

The timeliness of management information is an informational characteristic that influences the ability of managers to react quickly to events that can be influenced by the timeliness of the information provided by the systems, in terms of frequency of information provision and speed of information provision (Chenhall & Morris, 1986). The research tool was adapted from the taxonomy of controls, defined according to their informational characteristics, by Chenhall and Morris (1986), validated in the interorganizational context (Velez et al., 2015). Interorganizational trust, called trust in the alliance partner in the study by Nicolaou et al. (2011), was measured with six statements adapted from the tool by McKnight et al. (2002), who consider benevolence, integrity, and competence, attributes that reflect the belief and expectation of trusting the partner (*trusting beliefs*). The CFA confirmed the unidimensionality of the construct. Interorganizational cooperation was measured based on the tool by Heide and Miner (1992), validated in the relationship between buyer and supplier. For Heide and Miner (1992), this construct is characterized by four potential domains of cooperation, affected by patterns of interactions between partners.

3.3 Survey analysis and bias procedures

To test the hypotheses, partial least squares structural equation modeling was applied. The procedure is characterized by its two main components, the measurement model and the structural model, and the determination of which independent variables predict each dependent variable in the model (Hair, Hult, Ringle & Sarstedt, 2017). The CFA preceded the modeling analysis since the study variables are multiple scales but calculated as latent variables in the structural model. The CFA, run in the *R software* with the help of the *SEM* package, attested to the quality of the formation of variables by the observed indicators. The definition of the components was based on the correlation of the indicators within the predetermined factors. The fit of the model variables was found, in relation to the unidimensional and multidimensional constructs, with significant R^2 of each component (statements) in each factor (variable), and SRMR <0.08 in the 90% confidence interval and, RMSEA close to or less than 0.06 (Brown, 2015).

In the *SmartPLS3 software*, the PLS algorithm, *bootstrapping,* and *blindfolding* were used to analyze the hypotheses based on statistical parameters postulated by Hair et al. (2017). In the multigroup analysis, the sensitivity of the results was verified according to the sample, among: (i) 104 managers of Porto Digital companies and (ii) 99 managers of PqTec SJC. This involved validating the model using the 5% invariance test, the consistent PLS algorithm (assessing the quality criteria for both samples), *bootstrapping* by multigroup analysis (MGA), and *blindfolding* (Hair et al., 2017).

This study used and was limited to data from a single source, collected at a single point in time. Therefore, it is likely to be vulnerable, and the data have common method bias. Podsakoff, Mackenzie, and Lee (2003) suggested that we initially sought to control common method bias through procedures before collection and, subsequently, through statistical

controls. Respondents were guaranteed anonymity and communicated that only aggregated results would be reported and that they would not need to report the name of their company or identify themselves. It was guaranteed that there would be no right or wrong answers and that they should respond according to their reality in the company. After the collection, statistical tests were performed in the *R software*. Firstly, Harman's single factor test and only 22.28% of the variation of the variables can be explained by a single factor, well below the common threshold of 50% (Podsakoff et al., 2003). In this sense, the common method bias inherent to the method used in data collection is unlikely to be a serious concern in the result interpretation.

The correlation matrix between the latent variables was assessed to identify possible biases. The threshold adopted was a significant correlation of up to 90%, which was not identified in the model. Possible distortions in the sample were analyzed by the non-response bias test and previous studies that used a *survey* and did not have contact with the entire sample and/or control over who actually responded (e.g., Mahama, 2006). In these cases, it is possible to measure possible biases of non-respondents using the comparison methodology, in which, when testing differences between the answers of the first and the last respondents, late respondents are assessed as those who chose not to participate in the survey (Wåhlberg & Poom, 2015). To this end, the *t-test* of independent samples was conducted, and the answers of all the statements between the first 20% of the respondents were compared with the last 20% (first *versus* last weeks of collection). The results indicated no significant differences (5% significance) between the first and last 41 respondents, indicating no non-response bias in the sample, based on the first-last methodology.

4. Analysis of the Results

4.1 Measurement model

The measurement model precedes the structural equation modeling that tests the study's hypotheses when it seeks to attest to the validity and reliability of the constructs (Hair et al., 2017). Based on their definition and theoretical construction, the items were analyzed as reflective indicators. Table 1 presents the results of the model's validity, reliability, and fit criteria.

Table 1. Measurement model

Panel A: Discriminant validity by the Fornell-Larcker criterion							
	Speed	**Frequency**	**Trust**	**Sharing**	**Flexibility**	**Problem-solving**	**Power**
Speed	**0.897**						
Frequency	0.604	**1.000**					
Trust	0.454	0.214	**0.851**				
Info. sharing	0.443	0.216	0.662	**0.840**			
Flexibility	0.392	0.273	0.638	0.731	**0.869**		
Problem-solving	0.420	0.225	0.700	0.806	0.697	**0.877**	
Power	0.367	0.130	0.575	0.693	0.538	0.689	**0.851**
Panel B: Indicators of quality and convergent validity							
	Speed	**Frequency**	**Trust**	**Sharing**	**Flexibility**	**Problem-solving**	**Power**
AVE (>0.50)	0.804	-	0.725	0.706	0.755	0.770	0.724
CR (>0.70)	0.891	-	0.940	0.905	0.902	0.909	0.886
Alpha (>0.70)	0.757	-	0.924	0.861	0.838	0.850	0.807
Panel C: Model fit indicators							
		SRMR		**Chi-square**		**NFI**	

Fit criteria	0.065	685.213	0.793

Legend: AVE = Average Variance Extracted; CR = Composite Reliability; *Cronbach's* alpha = internal consistency of latent variables; SRMR = Standardized root mean square residuals; NFI = Normed Fit Index.
Note: n=203. The diagonal elements represent the square roots of the average variance extracted, and the off-diagonal elements the correlations between the variables (Hair Jr et al., 2017). Correlation coefficients equal to or greater than |0.221| are significant (p<001). Internal VIF = max. 1.991 and external VIF = max. 3.289.

The factor loading of the indicators for each variable, which represents how much the variation of the indicator is explained by the variation of the respective variable, is recommended to be greater than 0.70 (Hair et al., 2017). The criterion that led to the exclusion of a statement from the joint problem-solving variable (RC3) from the model and the reliability of the other indicators was attested. The convergent validity of the latent variables, which verifies how positively the statements are correlated with their respective variables, presents values considered adequate, with average variance extracted (AVE) greater than 0.50.

The reliability of the internal consistency of the indicators is also adequate since *Cronbach's alpha* and the composite reliability presented values above 0.70. This threshold attests that the set of statements presents reliable degrees of fit (Hair et al., 2016). The convergent validity and reliability of the indicators and study variables captured by statements on a seven-point *Likert* scale are ensured. The discriminant validity was assessed by the criterion of crossed loads, in which the validity of the indicators was verified. In contrast, the Fornell-Larcker criterion confirmed the discriminant validity of the latent variables. In this criterion, the square roots of the values obtained from the convergent validity (AVE) of each variable are compared with the correlations with the other variables, and the values of the roots (highlighted in diagonal) were higher than the correlation coefficients of the other variables (Hair et al., 2016).

There is a significant correlation between most of the latent variables of the study, with moderate to high coefficients, mainly in the correlations between the cooperation variables, which shows positive associations between most of the model variables. It was found that cooperative behaviors are highly associated with each other, which suggests that the engagement of companies linked to the park in some form of cooperation is related to the increase in the possibility of engaging in other cooperative behavior, results in line with assumptions brought by Heide and Miner (1992) in the dimensions of cooperation, and empirically found in Mahama (2006), in the context of supply chains. It is also noted that higher levels of trust by managers of companies linked to the technology park are associated with greater engagement in cooperative behaviors. These results suggest that in an interorganizational relationship characterized by high levels of trust between the partners, the cooperative behavior of companies is attenuated in the four ways of demonstrating cooperation (dimensions). These results are in line with Velez et al. (2015), that high trust encourages partners to cooperate more and more.

To verify how much the model variables are measuring close perceptions, in addition to being correlated, the analysis of the *Variance Inflation Factors* indicators was conducted, which attested to the absence of multicollinearity between the latent variables and between the indicators, as the VIF values are lower than 5 (internal <0.1991 and external <3.289) (Hair et al., 2017). Finally, the fit of the proposed model was verified according to fit indicators, with SRMR values of 0.065 (SRMR acceptable standards <0.08), chi-square values of 685.213, and NFI values of 0.793. Values suggest that the model's hypothetical structure adequately fits the study's empirical data, with values considered good since NFI=1 would indicate a perfect fit (Bentler & Bonett, 1980). In this way, it was able to attest to sufficient levels of reliability, validity, and fit to proceed with the hypothesis test.

4.2 Structural model - Hypothesis testing and discussion of results

In the structural model, the path coefficients are demonstrated to examine the model's relationships proposed in the research by the *bootstrapping* and *blindfolding* technique with 5,000 resamplings and 300 iterations, *bias-corrected* confidence intervals, and a significance of 5% (Hair et al., 2017). Table 2 presents the path coefficients (β), the *t-Statistics* (|β/standard deviation|), the *p-value*, and the effect size (f^2) of each relationship, grouped according to each hypothesis of the study.

Table 2. Structural model - partial least squares results

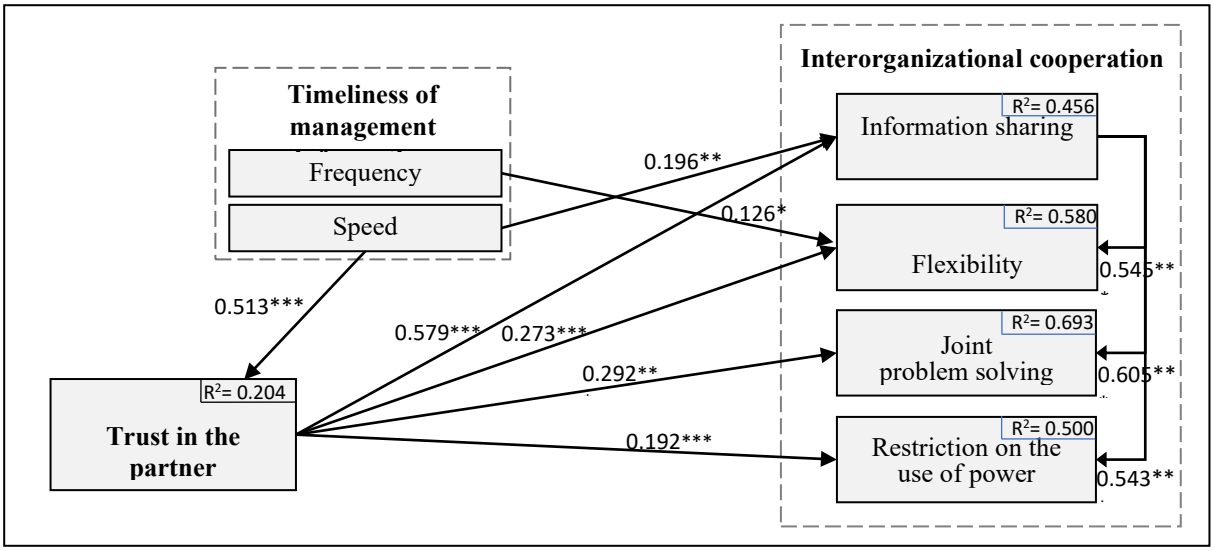
Panel A: Structural model - hypothesis testing by path analysis						
	Structural model - path analysis	***β***	***t-Statistics***	***p-value***	**f^2**	***Ratings* (f^2)**
H1	Speed info. → trust	0.513	7.007	**0.000**	0.210	medium effect
	Frequency info. → trust	-0.097	1.372	0.170	0.008	-
H2a	Speed info. → sharing	0.196	2.242	**0.025**	0.037	small effect
	Frequency info. → sharing	-0.027	0.363	0.717	0.001	-
H2b	Speed info. → flexibility	-0.049	0.639	0.523	0.003	-
	Frequency info. → flexibility	0.126	1.789	**0.074**	0.024	small effect
H2c	Speed info. → problem-solving	0.002	0.032	0.975	0.001	-
	Frequency info. → problem-solving	0.030	0.482	0.630	0.002	-
H2d	Speed info. → power restriction	0.092	1.344	0.179	0.009	-
	Frequency info. → power restriction	-0.085	1.308	0.191	0.009	-
H3a	Trust → sharing	0.579	8.785	**0.000**	0.494	large effect
H3b	Trust → flexibility	0.273	3.672	**0.000**	0.095	small effect
H3c	Trust → joint problem-solving	0.292	4.250	**0.000**	0.150	medium effect
H3d	Trust → power restriction	0.192	2.314	**0.021**	0.040	small effect
H4a	Sharing → flexibility	0.545	7.685	**0.000**	0.386	large effect
	Trust → sharing → flexibility	0.364	6.791	**0.000**		
H4b	Sharing → problem-solving	0.605	9.206	**0.000**	0.652	large effect
	Trust → sharing → problem-solving	0.404	8.128	**0.000**		
H4c	Sharing → power restriction	0.543	6.949	**0.000**	0.322	medium effect
	Trust → sharing → power	0.367	6.946	**0.000**		

Panel B: Model determination and validation coefficient					
Determination and validation coefficient	**Trust**	**Sharing**	**Flexibility**	**Problem-solving**	**Power**
Adjusted R^2	0.204	0.456	0.580	0.693	0.500
Q^2	0.137	0.292	0.402	0.496	0.330

Legend: β = structure coefficients; f^2 = effect size; R^2 = coefficient of determination; Q^2 = predictive relevance by construct cross-validated redundancy.
Note: n=203. Effect size classification (f^2) based on Cohen's (1988) parameters: small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$), and large effect ($f^2 = 0.35$).

Based on the results of Table 2, based on statistical parameters, it is analyzed whether they corroborate the four proposed hypotheses, which had a sample of 203 managers from companies associated with two technology parks among the most representative in Brazil. Figure 2 shows the results of the direct relationships accepted at a significance level of 10%, β (path coefficient), and the statistical significance (*p-value*) of each relationship, and the coefficient of determination of the model in the dependent variables (R^2).

Figure 2. Research results – direct relationships accepted



Note*:* n=203. Significance (*p-value*) at the level of *p<0.10; **p<0.05; ***p<0.001.

In hypothesis H1, a positive influence of the timeliness of management information on trust in the partner is assumed, a relationship confirmed only in the speed dimension of the information provided by the MCS. Thus, H1 is partially accepted since the speed of information positively and significantly influenced interorganizational trust (0.513, p<0.001), with a medium effect (f^2 >0.15). The timeliness of management information in terms of the frequency of supply to park organizations did not confirm to be a determining factor in the trust of organizations in the face of interorganizational relationships. By segregating timeliness into two attributes, it is observed that the speed with which the information is provided after the occurrence of the reported event and the processing timing indicates the quality of the MCS, whose timeliness positively influences trust in the partner and not the frequency with which the information is provided. It contributes to the previous literature, in which Velez et al. (2015) identified the influence of timeliness in interorganizational relationships as a unique informational characteristic on trust in the relationship between exporter and intermediary. The present study suggests that such influence is explained by the speed of information of the MCS. It also demonstrates that control systems can influence trust, as postulated by Inkpen and Curall (2004).

The speed and frequency of the information provided by the MCS to the interorganizational relationship are characteristics that complement the timeliness of the MCS, which make the information timely, ensuring the greater possibility of adjustment and reaction to the changes that have occurred. In terms of trust in the partner, this was explained in 20.4% by the speed of information, while the frequency did not show significance. It is noteworthy that this panorama is specific to the interorganizational relationship investigated and the purpose of the relationship. In technology parks, companies are usually in a small geographic radius and are linked to the park in the search for innovation. In this sense, what is useful to the information provided by the MCS to the managers of these companies is that they have been processed and provided with high speed so that in a dynamic context, decisions are made and behaviors adjusted, while the frequency of providing information (e.g., daily or weekly frequency) did not show to strengthen the bonds and perceptions of trust in the relationship. This result may be due to the high frequency of interactions and contact that both sides of the relationship already have, as they live close by, share shared spaces, rely on the services of the park administrator, etc. While the exchange of information is a source of interaction, the lack of interaction may suggest that formal mechanisms, such as MCS, may be necessary to build trust between partners (Barretta & Busco, 2011). It is inferred that in the

case of the park, high interaction implies less presence of controls.

Hypothesis H2 assumed a positive influence of the timeliness of management information on the dimensions of interorganizational cooperation outlined by Heide and Miner (1992), who in the CFA attested to the four-dimensionality of the construct (RMSEA <0.80, CI:90%), with high levels of correlation between dimensions. This suggests that companies tend to engage in other types of cooperation when presenting some cooperative behavior. However, the two characteristics of the MCS positively influenced different dimensions of cooperation, which also indicates the multidimensionality of the timeliness of management information. Specifically, the speed of information provided by the MCS positively influenced the level of information sharing of organizations with their technology park (0.196, $p<0.05$), with a small effect (f^2 <0.15 and >0.02). This suggests that the greater the effectiveness of the MCS in terms of timeliness, characterized by the speed of provision and processing of information, the greater the levels of information shared by organizations with their park as a counterpart. The high speed of information supply by the park ended up intensifying social exchanges in the relationship, in the form of information exchange, which is one of the purposes of interorganizational relationships. Thus, the H2a is partially accepted for the dimension of speed of MCS information and information sharing. In the study by Mahama (2006), the investigated MCS component (socialization) showed a direct influence only on information sharing. These results corroborate the arguments of Heide and Miner (1992), that information sharing is more evident in contractual terms.

The frequency (periodicity) of the information provided by the MCS, another characteristic of a timely MCS, only influenced the flexibility of the relationship (0.126, $p<0.1$), with a small effect (f^2 <0.15 and >0.02), which allows partially accepting H2b. Flexibility refers to the form of cooperation characterized by the associated company's propensity to adapt to eventual changes in the relationship in the context of exchanges. The high frequency of providing reports by the technology park is associated with a greater propensity for companies to be flexible in the face of possible changes. For Mahama (2006), flexible behaviors reflect the partners' ability to adapt and (re)negotiate solutions in situations not foreseen in the relationship. This suggests that a greater frequency of supply of information from the MCS, for example, with daily to weekly reports, implies a greater frequency of contact between the parties, whose line of argument corroborates the study by Heide and Miner (1992). The complementarity of the timeliness characteristics of the MCS seems ideal because despite being highly correlated, it was identified that the characteristic that influences a certain cooperative behavior might not give rise to another form of cooperation. In short, H2a (sharing) and H2b (flexibility) are partially accepted, and H2c (problem-solving) and H2d (power) are rejected. Although they also found the influence of MCS on cooperation, results bring specificities when compared with findings from studies that used other control taxonomies (Mahama, 2006) and cooperation in a unidimensional way (Velez et al., 2015).

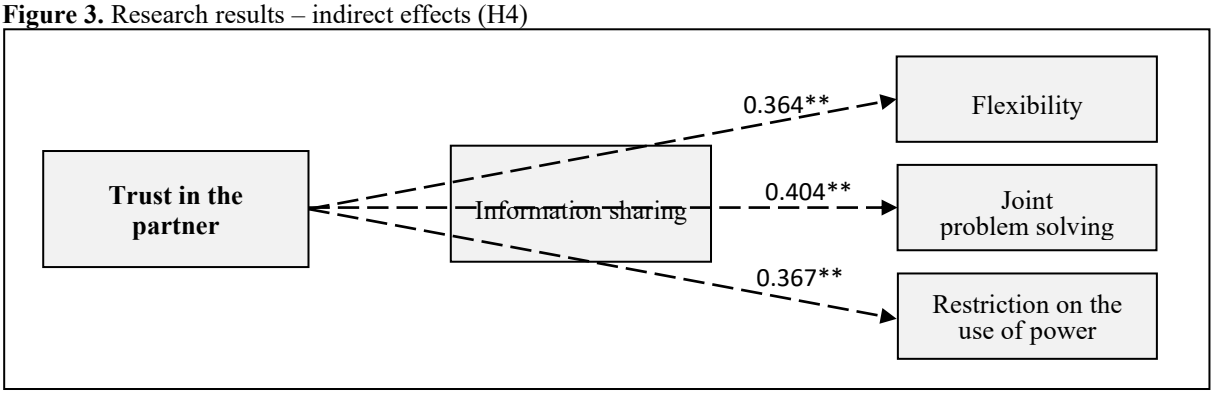
Hypothesis H3 outlined the positive influence of trust in the partner on the dimensions of interorganizational cooperation and managed, in a relationship established between technology parks and associated organizations, to find evidence to accept it. Specifically, trust in the relationship established with the park predicts higher levels of cooperative behavior, characterized by a context in which levels of information sharing intensify (H3a: 0.579, $p<0.01$), flexibility in the relationship (H3b: 0.273, $p<0.01$), joint problem solving (H3c: 0.292, $p<0.01$), and restriction on the use of power (H3d: 0.367, $p<0.05$). Concerning the effect size (f^2), emphasis is placed on the influence of trust in information sharing (large effect) and joint problem solving (medium effect), which indicates that trust is more strongly associated with these forms of cooperation.

The association between trust and cooperation is widespread in the literature. Thus, the acceptance of H3 corroborates several empirical studies and theoretical assumptions, such as

the study by Das and Teng (1998) in the context of strategic alliances. Trust in the partner helps to boost alliance performance (Nicolaou et al., 2011), ensure reciprocity and information sharing in the relationship (Rad, 2017), and enhance cooperation between the parties. These factors can foster the success of the interorganizational relationship (Martins et al., 2017) in different contexts, in this study in technology parks. When comparing the effects of trust between the dimensions of cooperation, highlighting information sharing (large effect), followed by joint problem solving (medium effect), it is inferred that these are more daily activities of the established relationship and also more tangible things for managers to consider. Results that suggest that in a solid interorganizational relationship, based on trust between the parties, greater trust in the partner is a catalyzing factor for exchanges that occur in cooperative behaviors, mainly characterized by greater information sharing and by the parties' engagement in solving problems together, which can be decisive for continuing the relationship.

The theoretical model also assumed indirect effects through mediation, represented in the relationships of hypothesis H4, which verifies whether the influence of trust on cooperation is explained by information sharing. Figure 3 shows the results of mediation relationships, by β (coefficient) and statistical significance (*p-value*) of each indirect relationship (trust→sharing→three dimensions of cooperation).

Figure 3. Research results – indirect effects (H4)



Note: n=203. Significance (*p-value*) at the level of *p<0.10; **p<0.05; ***p<0.001.

The mediating effect of information sharing demonstrated statistical significance in the three dimensions of H4. This relationship is characterized as a partial mediation of information sharing in the relationship between trust in the partner and flexibility in the relationship (H4a), joint problem solving (H4b), and restriction on the use of power (H4c) since the direct relationship has already been confirmed, mediation does not explain the total effect (Hair et al., 2017).

It was identified that the interaction between companies favors cooperation, as seen in studies such as Heide and Miner (1992), especially information sharing. The study revealed direct influences of trust on cooperation and information sharing on cooperation, which corroborates studies that assumed that trust facilitates communication and information sharing (McKnight et al., 2002; Mahama, 2006; Seppänen et al., 2007). The partial acceptance of mediation in H4 indicates that the influence of trust on flexibility and joint problem solving does not occur only through information sharing. This result is in line with Mahama's (2006) argument that generally, the forms of cooperation are positively associated, but they are not necessary conditions for the others to occur. Therefore, trust is a condition for organizations to engage in cooperative behavior. The sharing of information narrows the relationship and favors flexibility, joint problem solving, and restriction on the use of power.

When analyzing the model's predictive power, which indicates how much the independent

variables explain the variation of the dependent variables of the model, it is verified by Pearson's coefficient of determination (adjusted R^2) moderate to high predictive power. The R^2 values indicate that the trust is explained by the timeliness of the MCS in 20.4%, mainly concerning the speed of the information provided. Emphasis is given to the model's predictive power in the dimensions of interorganizational cooperation, which were explained in more than 45% by the timeliness of the MCS (speed and frequency), interorganizational trust, and information sharing, substantiating the predictive validity of the model. The antecedent variables of interorganizational cooperation explained 45.6% of the variations in the flow of information that the associated organizations share with the park, in 58% flexibility, which characterizes the predisposition of companies to adapt to changes, about 70% of how much the companies are willing to solve problems in their relationship with the park, and in 50% the restriction on the use of power, which reflects that the park does not act opportunistically. The model fit was verified by the predictive relevance (Q^2), which assesses how much the structural model is accurate, having as fit criteria values greater than zero (Hair et al., 2017).

4.3 Sensitivity of results depending on the context - comparison between technology parks

The literature on cooperation initially focused on identifying fixed antecedents to determine cooperative behaviors (Heide & Miner, 1992), i.e., disregarding contextual factors and relationship specifics. However, the context can influence the predisposition to cooperate (Heide & Miner, 1992; Das & Teng, 1998), highlighting the importance of considering the context and not being limited to the universal antecedents of cooperation. Thus, based on the elucidated theoretical arguments, the study sample was segregated for a more in-depth analysis to verify the generalization power of the results in different interorganizational relationships, without influencing the results of the hypotheses. To this end, the sample of 203 managers was segregated into 104 managers of organizations associated with Porto Digital and 99 managers of organizations associated with PqTec SJC.

Initially, possible variations of the measures of the constructs between the groups were assessed, which is a prerequisite for the multigroup analysis (Hair et al., 2017), and through the invariance test, it was found that the statements did not show differences at a significance level of 5% in the comparison between the two parks. Then, the validity and reliability of indicators and variables for both samples were attested in the measurement model. The structural model was performed by multigroup analysis with the *bootstrapping* technique with 5,000 resamplings. Table 3 presents the results of the coefficients of the structural model of each technology park and the comparison by multigroup analysis (PLS-MGA).

Table 3. Structural model by multigroup analysis – MGA

Panel A: Structural model - hypothesis testing by path analysis in multigroup analysis								
Structural model - path analysis by MGA	**Porto Digital** (n=*104*)			**PqTec SJC** (n=*99*)			**PLS-MGA**	
	β	***p-value***	**f^2**	***β***	***p-value***	**f^2**	***β*-dif.** (P-SJC)	***p-value*** (P *vs*. SJC)
Speed → trust	0.485	**0.000**	**0.177**	0.532	**0.000**	**0.258**	0.047	0.628
Frequency → trust	-0.192	0.113	0.028	0.004	0.957	0.000	0.197	**0.909**
Speed → sharing	0.276	**0.035**	0.066	0.094	0.372	0.011	0.182	0.139
Frequency → sharing	-0.028	0.800	0.001	-0.055	0.542	0.005	0.026	0.431
Speed → flex.	-0.092	0.424	0.009	-0.020	0.835	0.001	0.072	0.685
Frequency → flex.	0.168	0.140	0.038	0.087	0.280	0.014	0.081	0.278
Speed → problem-solving	0.037	0.708	0.002	-0.024	0.744	0.000	0.062	0.310
Frequency → problem-solving	0.067	0.532	0.006	-0.017	0.776	0.001	0.084	0.243
Speed → power	0.178	**0.099**	0.028	0.019	0.820	0.000	0.159	0.122

Frequency → power	-0.227	**0.020**	0.055	0.049	0.532	0.004	0.276	**0.986**
Trust → sharing	0.470	**0.000**	0.300	0.719	**0.000**	**0.860**	0.250	**0.974**
Trust → flex.	0.275	**0.010**	0.107	0.271	**0.007**	0.079	0.004	0.495
Trust → problem-solving	0.290	**0.008**	0.126	0.242	**0.000**	0.146	0.048	0.359
Trust → power	0.088	0.474	0.009	0.219	**0.034**	0.048	0.131	0.799
Sharing → flex.	0.546	**0.000**	**0.405**	0.560	**0.000**	**0.376**	0.014	0.528
Trust → sharing → flex.	0.311	**0.000**		0.418	**0.000**		0.107	0.853
Sharing → problem-solving	0.514	**0.000**	**0.379**	0.740	**0.000**	**0.533**	0.226	**0.973**
Trust → sharing→ problem-solving	0.307	**0.000**		0.555	**0.000**		0.249	**0.997**
Sharing → power	0.535	**0.000**	**0.309**	0.580	**0.000**	**0.375**	0.045	0.616
Trust → sharing → power	0.311	**0.000**		0.437	**0.000**		0.126	0.887

Panel B: Coefficient of determination

Adjusted R^2	**Trust**	**Sharing**	**Flexibility**	**Problem-solving**	**Power**
Porto Digital (n=*104*)	0.143	0.363	0.526	0.551	0.403
PqTec SJC (n=*99*)	0.271	0.557	0.627	0.840	0.598

Note: n=203; structure coefficient without the mediating variable in the Porto Digital model: trust→flex.= 0.577, p<0.001; trust→problem-solving = 0.609, p<0.001; trust → power=0.438, p<0.001; PqTec SJC: trust→flex.= 0.714, p<0.001;trust→problem-solving= 0.781, p<0.001; trust→power = 0.682, p<0.001. Internal VIF = Porto Digital (max. 2.450); PqTec SJC (max. 3); Q^2 = Porto Digital (sharing = 0.224; flex.= 0.370; problem-solving= 0.375; power = 0.245). PqTec SJC (sharing = 0.364; flex.= 0.416; problem-solving = 0.626; power = 0.433).

The results of the relationships of each data group and the comparison between the two groups in the PLS-MGA analysis focused on the two extremes (Henseler, 2012), and the significant differences between the parks are highlighted in the last column in bold. The analyses did not focus on sample statistical differences, but on the relationships that were accepted or not in each technology park. Among the main results, it is highlighted that in both technology parks, only the influence of the speed of MCS information on the partner's trust is significant, which expands the generalization power of this result. The main difference evidenced in this analysis is regarding the influence of the timeliness of managerial information on the dimensions of interorganizational cooperation, which did not present a significant positive influence of frequency on flexibility, as previously found. The influence of speed on information sharing was observed only in Porto Digital, and speed positively influenced the restriction on the use of power, and frequency negatively influenced this dimension. Ambiguous findings regarding the reflections of the two components of the timeliness of the MCS in the cooperation in both parks, and evident only in Porto Digital.

Highlight for the high effect of trust in the partner in sharing in PqTec SJC and moderate in Porto Digital, and the non-significance of trust in the restriction on the use of power in Porto Digital. Associations between trust in the partner and information sharing and other dimensions of cooperation were also observed in both contexts. We highlight the differences in the coefficients of determination since in PqTec SJC the explanation percentages were all considered high and significantly higher than those of Porto Digital. For example, the model explained joint problem-solving in 84%, and R^2 coefficients greater than 25% have high predictive power (Cohen, 1988). Differences between contexts can be analyzed in future studies. It is conjectured that variations in the structural configurations of company alliances may have important implications for the analysis of trust and control in interorganizational relationships (Das & Teng, 1998), as well as cooperation. It is speculated that the significance of some MCS results only in Porto Digital may be because it is an older and more formalized park. At the same time, the PqTec SJC is smaller and newer, uses integration mechanisms, and demonstrates the greater influence of trust on some cooperative behaviors, especially joint

problem-solving.

4.4 Study implications

The study has theoretical implications by providing **a** greater understanding of controls and their effects on relational variables, such as trust in the partner and interorganizational cooperation. Such understanding was focused on interorganizational relationships established in technology parks, a context little investigated. Despite their specificities, presented results partially convergent with the previous literature, generally applied in supply chains, distribution channels, and *joint ventures*. It contributes to the ambiguous literature of the investigated constructs, mainly by revealing that the effects of MCS in an interorganizational context are totally dependent on the characteristic considered and the investigated context, for example, with regard to its timeliness since the speed of information is proved influential for trust in the partner, which can be characteristic of innovative contexts. An active role of information sharing was found in the relationship between trust in the partner and the other dimensions of cooperation, whose social interaction partially explained flexibility and joint problem solving, which indicates that, although information sharing is not a condition, it promotes engagement in other cooperations.

Managerial implications for managers of interorganizational relationships are also observed since the scenario identified in this study brings the potential for analysis and review for the management of technology parks. The study provides evidence that supports strategic analyses related to MCS information to promote trust and interorganizational cooperation. For example, park administration may review and adjust MCS settings used in the relationship, emphasize the speed of processing, and provide information shown to build trust in the relationship. To maximize the benefits of an interorganizational relationship through cooperation, it is necessary to promote trust in the partner and assess which dimension of cooperation should be prioritized, as different control characteristics stimulate such behaviors. The relationship between the timeliness of management information and interorganizational cooperation was more present in Porto Digital, while the effects of trust in the partner were highlighted in PqTec SJC. Therefore, the parks administration can identify and disclose the management practices and strategies that led to such results for other relationships to act with the same purpose.

5. Conclusion

This study proposed and tested a structural model in the relationship between companies associated with two Brazilian technology parks. It identified influences of the timeliness of management information on trust in the partner and on some cooperation dimensions. The speed at which MCS information is provided influences trust in the partner and information sharing, relevant aspects in partnerships in the search for innovation. The frequency of information provided by the MCS leads the partner to be more flexible, highlighting the role of ongoing interactions and the relevance of providing daily and weekly reports to support decision making. The ambiguities identified in the literature on controls seem to result from contextual variations, as in the investigated parks, and from the typology used. The evidence allows us to conclude that the timeliness characteristics (speed and frequency) of the MCS act as complementary factors in stimulating the quality (trust) and success of the relationship (cooperation). The dimensions of interorganizational cooperation, although correlated, have their own motivations, and the sharing of information drives the other dimensions of cooperation, which are more subjective.

The main limitations of this research are related to the impossibility of generalizing the

results since this study includes evidence from companies from two Brazilian technology parks, and has already found contextual differences, as the literature assumes. Findings that show the relevance of further investigations and justify converging results from the organizational literature. Another limitation refers to the quantitative investigation of the model and the analysis methods used. Future studies may use qualitative approaches to investigate possible explanations for the rejected sub-hypotheses. Given the different effects of the speed and frequency of the information provided by the MCS on trust in the partner and on the dimensions of cooperation, it is recommended that future studies add consequences of cooperation to the model, for example, if cooperation leverages the economic performance of the relationship.

It is recommended to investigate the model in other interorganizational relationships, given that resource dependence affects the levels and type of cooperation exercised in the relationship (Heide & Miner, 1992), such as relationships with interdependencies and power asymmetry. The perspective of the Cooperation Theory brought by Heide and Miner (1992) is interactive, assuming that the anticipation of future interactions leads to interorganizational cooperation, which can be investigated in the context of technology parks to verify if the predicted relationships, such as those of indefinite duration, promote cooperation. Possibilities for future advances in the management literature, based on the definitions and findings of Chenhall and Morris (1986), encourage a more comprehensive investigation of the informational characteristics of MCS, considering the other components: scope, aggregation, and integration of information. One can also investigate aspects that affect the timeliness of MCS in an interorganizational context. For example, if environmental uncertainty affects the perception of the usefulness of timely information to manage interorganizational relationships.

Appendix. Research tool and descriptive statistics

Research tool and descriptive statistics	**Mean**	**S.D.**	**Factor loading**
Timeliness of MCS (adapted from Chenhall and Morris, 1986)			
Speed of information provided by the MCS (α= 0.756)	**4.03**	**1.36**	
T1. Information is provided once its processing is complete.	3.77	1.30	0.890
T3. There is no delay between the occurrence of an event in the park and the relevant information reaching your organization.	4.28	1.45	0.904
Frequency of information provided by the MCS (α= 1.00)	**3.09**	**1.61**	
T2. Reports are often systematically provided to your organization, for example, daily or weekly reports.	3.09	1.61	1.000
Interorganizational trust (adapted from Nicolaou *et al*., 2011) **(α= 0.922)**	**5.45**	**1.25**	
C1. If my company needed help, the park would do its best to support it.	5.13	1.31	0.846
C2. The park is interested in the success of my organization.	5.69	1.26	0.832
C3. I qualify the park as honest to associated companies and residents.	5.87	0.99	0.845
C4. The park keeps its commitments.	5.61	1.05	0.834
C5. The park plays its role in the relationship established with my company very well.	5.01	1.21	0.867
C6. Overall, this partner is a capable and valuable member of that alliance.	5.38	1.28	0.883
Interorganizational cooperation (adapted from Heide and Miner, 1992)			
Information sharing (α= 0.858)	**4.83**	**1.49**	
CI1. In this relationship, it is expected that any information that might help the other party will be provided to them.	5.17	1.33	0.858
CI2. The exchange of information in this relationship frequently occurs, even informally, and not just according to some pre-established agreement.	4.74	1.51	0.885
CI3. The parties are expected to provide private information if they can help each other.	4.35	1.62	0.719
CI4. We are expected to keep each other informed of events or changes that may affect the other party.	5.06	1.41	0.888

Flexibility (α= 0.837)	**4.45**	**1.34**	
FL1. Flexibility in response to park change requests is a hallmark of this relationship.	4.30	1.19	0.871
FL2. When an unexpected situation arises, the parties (your organization and the Park) prefer to work out a new agreement rather than sticking with the initial agreements.	4.17	1.34	0.855
FL3. Parties are expected to be willing to modify their agreements if unexpected events occur.	4.89	1.32	0.881
Joint problem solving (α= 0.849)	**4.77**	**1.44**	
RC1. In most aspects of this relationship, the parties are co-responsible for doing their part.	5.17	1.36	0.849
RC2. The parties treat problems that arise in the course of this relationship as joint rather than individual responsibilities.	4.59	1.42	0.884
RC3. The parties to this relationship do not mind owing favors to each other.	4.24	1.49	-*
RC4. The responsibility for ensuring that the relationship works for both is shared between the parties.	5.07	1.29	0.898
Restriction on the use of power (α= 0.803)	**5.25**	**1.51**	
RP1. The parties feel that it is important not to use any private information that could disadvantage the other party.	5.07	1.29	0.886
RP2. A characteristic of this relationship is that neither party is expected to make demands that could be harmful to the other.	5.44	1.41	0.899
RP3. The most powerful party is expected to restrict the use of their power in an attempt to get what they want.	4.83	1.58	0.760

Note: *statement excluded due to the factor loading of 0.544 being below the threshold (<0.7) recommended by Hair et al. (2017).

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