Organizational structure, service capability and its impact on business performance of logistics providers in the B2B context

Estrutura organizacional, capacidade dos serviços e impacto sobre o desempenho de fornecedores logísticos no contexto B2B

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Abstract: This study aims to verify what aspects related with organizational structure and service capability contribute to the performance of logistics providers in the business-to-business (B2B) context with client companies in supply chains. A sample of 80 logistics provider companies of the South of Brazil was surveyed, from a universe of companies that develop logistics activities, such as warehousing and inventory control, transportation, scheduled deliveries, port operations and customs clearance. The survey instrument consists of multiple scales to represent the construct variables related to organizational structure, service capability, and business performance. The answers reflect the logistics providers' perception of their work performance for the main customer in the supply chain. Resorting to multivariate statistical analysis based on structural equations modeling – LV-PLS (*Latent Variable – Partial Least Squares*) with *bootstrapping*, we found that the sole attribute that contributes for a better business performance of the logistics provider is its ability to meet, both technically and operationally, the service contracted by the customer. The ability to provide logistics service is positively and significantly influenced by an organizational structure endowed with both autonomy and organization.

Keywords: Logistics providers; Supply chain management; B2B relationship; Business performance.

Resumo: *O objetivo deste estudo é verificar quais aspectos associados à estrutura organizacional e à capacidade de prestação de serviços contribuem para o desempenho de fornecedores logísticos no contexto de relações B2B (business to business) com empresas cliente, configuradas em cadeias de suprimentos (CS). Uma amostra, incluindo 80 empresas fornecedoras de serviços logísticos no sul do Brasil, foi obtida através de uma survey num universo de empresas que desenvolvem atividades logísticas de armazenagem, controle de estoque, transporte, entregas programadas, operações portuárias e desembaraço aduaneiro. O questionário utilizado continha escalas múltiplas para representar as variáveis dos constructos relacionados à estrutura organizacional, capacidade dos serviços e desempenho. As respostas refletiram a percepção que os fornecedores de serviços logísticos tinham de suas atividades em relação ao seu principal cliente na cadeia de suprimentos. Utilizando análise estatística multivariada baseada em modelagem de equações estruturais, LV-PLS (Latent Variable – Partial Least Squares) com procedimento bootstrapping, verificou-se que o único atributo que provoca impacto sobre a obtenção de melhor desempenho do fornecedor de serviço logístico é a sua capacidade de cumprir técnica e operacionalmente o serviço contratado pelo cliente. A capacidade de fornecer serviços logísticos recebe influência positiva e significante tanto de uma estrutura organizacional dotada de autonomia quanto de formalização.*

Palavras-chave: *Fornecedores logísticos; Cadeia de suprimentos; Relacionamento B2B; Desempenho.*

1 Introduction

The purpose of this article is to investigate what kind of organizational structure and which characteristics of service capability can influence the performance of logistics service providers, particularly targeting the main client in a B2B (business to business) relationship in supply chains.

This analysis is based on some assumptions. The strategy to adjust certain aspects to the capability of service rendering in order to meet customer needs is theoretically supported by authors in the Strategy-Structure-Performance (SSP) literature. The organizational structure seen here, as a valuable internal resource for the generation of services, is supported by the Resources Based View (RBV) approach. These proposals are discussed in more detail later in this article.

B2B relationships are present in all supply chain (SC) configurations. Competition among supply chains is a fact, which implies closer relationships between companies of the same chain (Vanalle & Salles, 2011). The evolution of the SC approach to a management perspective, known as Supply Chain Management (SCM), asks for focusing on logistics services activity the key role of operations, as can be seen in Figure 1.

The success of a SC configuration depends entirely on logistics and operations that guide it, as well as vertical and horizontal relationships between supplier and customer. In a typically industrial SC, suppliers of logistics services, or logistics operators, are links of this chain that integrate a B2B perspective with contractors. The existence of more links in B2B relationships requires, in this configuration, the logistics service organizations to have internal skills to synchronize the various flows of information, products, services, finance and suppliers' knowledge to customer needs and service. The search for scientific solutions to address these problems has a long history. The case study of Agrico Chemical is presented as one of the first modeling approaches to synchronize the triad, production - distribution – inventory, in its global supply and distribution network (Glover et al., 1979). Services operational complexity increases when the different constraints of capability, information, skills, capital, and human resources existing along the SC are considered.

The SC approach shows that the performance of member companies is influenced by the performance of its chains and vice versa. All efforts, tactical, strategic and operational, in the execution of business processes between members of the supply chain result in a level of service offered to end customers and also to the members of each link (Oliveira & Leite, 2010). Under this approach, the contribution of the logistics provider for the performance of the various supply chains and its own performance lies in its ability to provide business customers the services they have contracted. This study argues that the ability to provide logistics services may be affected by the organizational structure formality, which includes processes and operations as well as the performance of logistics providers. Particularly in the B2B relationship, the characteristics of the organizational structure influence both the type and the nature of the services offered to the customer, as well as the service quality.
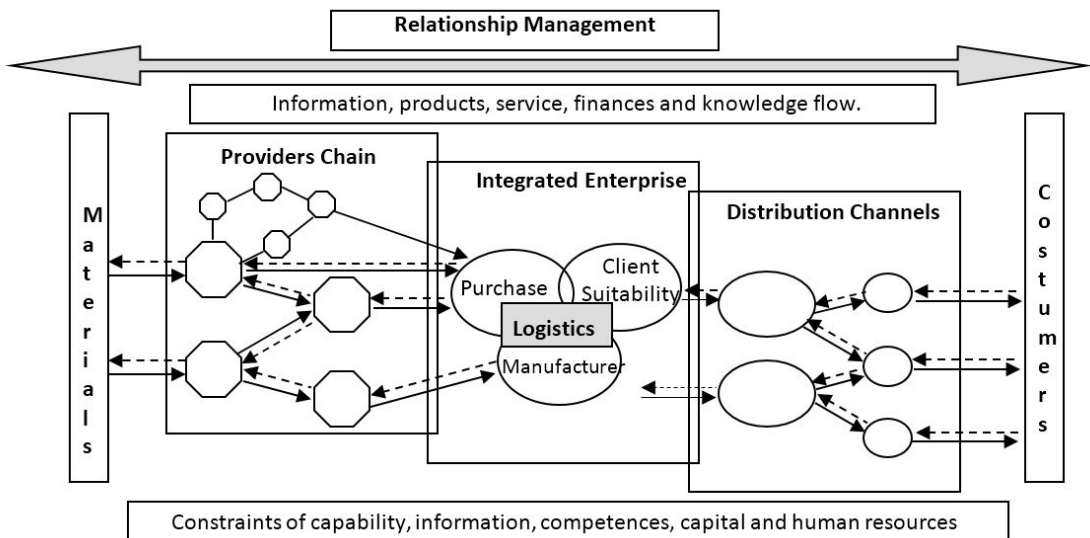

Figure 1. Logistics Services and the Supply Chain Management. Source: Bowersox et al. (2006).

The research question that guides this work is: What elements associated with the organizational structure and service capability contribute to the satisfaction and performance of logistics service providers configured as supply chain companies?

This article is divided into six sections: introduction, theoretical framework, research method, results presentation and discussion, conclusions and research limitations. The theoretical framework is divided into four topics. The first is a presentation of the role of logistics service providers in the supply chain context. The second topic discusses the organizational structure guiding aspects according to the SSP logic, from which six hypotheses are presented to model the implications that the structures, endowed with autonomy or formalization, give cause for the ability to provide services. The third topic is about the ability of logistics services strategically focused on the RBV approach. Six cases are presented: two related to information sharing, another two referred to logistics services, and the last two related to customer service management. Hypotheses link services capability implications to the logistics service provider's performance. The fourth topic of the theoretical framework presents the last hypothesis, the satisfaction of the logistics service provider with its main customer generating better performance. The research design of the 13 hypotheses to be tested is also presented at the end of the theoretical framework. The third session covers the research method carried out to gather and analyze the data in order to test hypotheses. The conclusion of the article is found in sessions 4, 5 and 6 which, after discussing the results, present the research conclusion based on the theoretical framework used, as well as the study limitations.

2 Theoretical context of logistics providers shaped by B2B relationship

In the B2B perspective, responsibility for the proper functioning of a SC lies with the end in which enterprises play the role of sellers/suppliers to client companies, following an upstream flow. In the case of logistics, the organizations responsible for handling, inspection, control, customs clearance and warehouse management that essentially sell or supply service to other companies should also keep this flow chain.

Research targeting satisfaction, quality and performance, customer figure is more exploited by academic and scientific resources than under the supplier's point of view. Successes and failures are shared among all members of a SC, indicating that these aspects are important to the seller/supplier and to the buyer/client.

2.1 Logistic service providers in supply chains

Supply chains originate from the vertical disintegration of processes and operations, and the technical and social expertise, which implies greater integration and coordination of activities, and greater coordination among the agents belonging to the chain (Prochnik, 2002).

The SC approach evolved into the paradigm Management Supply Chain (MSC), which led to the revaluation of logistics activity. In this configuration, the existence of more B2B relationship links compels organizations to develop internal skills to synchronize the flow of suppliers to the needs of transformation, and these with customer service (Bowersox & Closs, 2010).

The external competence to operate and maintain these continuous flows can be obtained through the reinterpretation of logistics by the company, requiring investment in software and hardware infrastructure, as well as in machinery and equipment to provide efficient execution of functions. For many companies, these costs are very high, making them opt for logistics service providers, which are companies specialized in developing general or specific activities of logistics. Service levels, present in these B2B relations between logistics providers and customers, can involve transport hiring, transport and storage, and even a complete outsourced solution, which involves the transfer of means activities to another company to reduce their internal costs (Guidolin & Monteiro, 2010).

A research led by Langley (2009), conducted by Capgemini Consulting, shows the evolution of logistics service providers in accordance with their competencies in logistics management (Figure 2). The traditional logistics provider is hired to perform basic activities of cargo transportation and warehousing, where process management levels remain under the control of customers. The logistics provider 3PL (Third-Party Logistic) type takes the coordination and part of the planning of the logistics activities of its customers through contracts, adding more value to their services. The logistics provider 4PL (Fourth-Party Logistic) takes the decision-making stage in the levels of planning and coordination of logistics activities and may even hire third-party services to perform certain activities, establishing a direct interface with the client company, providing solutions for this customer.

The research pointed out to the manager of SC services as the more complex level of the supply
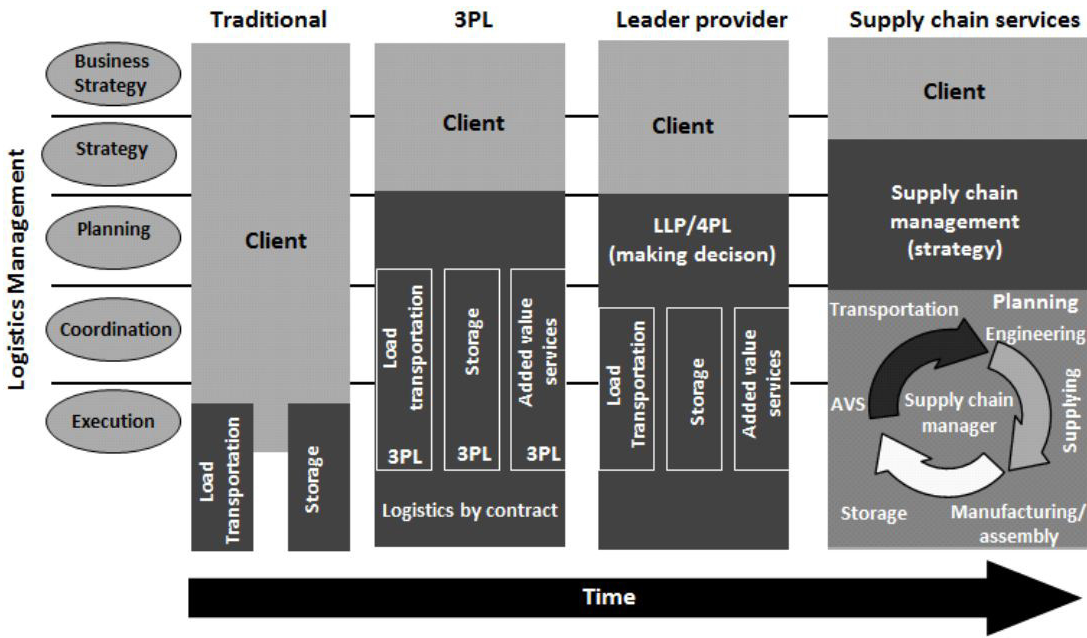
Figure 2. Logistics Services Providers Evolution. Source: Langley (2009, p. 33).

chain. This logistics provider develops the SC coordination strategy together with the client, managing the complete cycle of activities from transportation to value added service providing as shown in Figure 2.

Logistics services providers need to demonstrate high skill and reliability in its sector, with respect to the sharing of confidential data and risk, so that client companies grant them greater responsibility for managing their SC (Guidolin & Monteiro, 2010).

2.2 Organizational structure drivers

In the SSP paradigm, in which the structure tends to adapt to strategy, or according to the capability strategy in which strategy tends to adapt to the structure, companies seek to make these adjustments in order to improve financial and market performance (Chandler, 1962). Although this theme is recurrent and fairly debated in academia, it has taken on an importance increasingly strategic, both in costs and differentiation, particularly when service is sold to the customer.

Literature has been pointing out that the organizational structure, marked by autonomy, formal or specialization is considered in both SSP and RBV views as an organizational resource that can contribute to a sustainable competitive advantage (Daugherty et al., 2011; Newbert, 2007). This is due to organizational structure, with its resources and innovation, can hardly be copied, and its connection

with performance is difficult to be understood by competitors (Miller & Shamsie, 1996).

Characteristics of the supplier organizational structure in the B2B context can influence the type of service, the information sharing, and the service quality provided to the customer. In the literature review carried out by Daugherty et al. (2011), studies on the implications of a more formalized organizational structure prevailed from 1960 to 1985 (Burns & Stalker, 1961; Thompson, 1967; Miller, 1987). Later on, few studies have analyzed the effect of organizational structure on the firm performance. Rescuing this historic route over 17 years, Pugh et al. (1968) and Ruekert et al. (1985) pointed out that the structure with greater formalization has rules, procedures, instructions and written communications. In the current scenario, these characteristics can be matched in the standardization of logistics service. The organizational structure focused in formalization can restrict flexibility and innovation (Mollenkopf et al., 2000), which are essential for the provision of customer service.

More recent studies have revealed that organizational structures with greater autonomy give a more significant contribution to the ability of providing logistics services to the detriment of a greater formalization (Sachdev & Merz, 2010). According to these approaches, the following hypotheses for the *modus operandi* of logistics providers that render services to business customers in supply chains are presented:

H1a: The more formalized is the organizational structure of logistics service providers, the greater the information-sharing.

H1b: The more formalized is the organizational structure of logistics service providers, the better the logistics service.

H1c: The more formalized is the organizational structure of logistics service providers, the better the customer service provision.

In structures with greater autonomy, professionals can feel invested more power and responsibility in function, and in consequence, present new solutions to problems and work routines. Greater autonomy is aligned with decentralization of decision making, which promotes greater participation and greater inclusion of individuals in decision-making (Germain et al., 1996). In this context, the following hypotheses, which can be associated with the logistics providers' *modus operandi*, are presented:

H2a: The more autonomous is the organizational structure of logistics service providers, the greater the information-sharing.

H2b: The more autonomous is the organizational structure of logistics service providers, the better the logistics service.

H2c: The more autonomous is the organizational structure of logistics service providers, the better the service provided to the customer.

2.3 Resources and capability of logistics services

Providers of logistics services, involved in inter-organizational relationships with other companies, must create structures and processes to interact on shared goals and the establishment of a common vision with other partners of the SC (Rodrigues et al., 2004), and achieve the desired performance.

RBV theory is the approach that associates resources to capability, and this one to performance (Bharadwaj, 2000; Hunt & Davis, 2012; Sanders et al., 2011). The resource capability is defined as the way a company uses - transforming, integrating or implementing resources - so that they become unique, presenting the company as a "bundle of resources" (Defee & Fugate, 2010). Barney (1991) is the creator of the theory in which the firm resources classified as assets, organizational processes, firm attributes, information, knowledge, etc., when controlled,

allow the firm to implement strategies to improve efficiency and effectiveness.

Sharing information is essential to the performance of the SC and its members. Automotive and electronic subcomponents providers develop close ties with manufacturing companies through technology sharing, capital to ensure high-volume, long-term supply contracts and information (Defee & Stank, 2005). Coordination systems mediated by technology enable the exchange of timely information with internal and external members of the SC, allowing data to be transferred and shared through the chain, which facilitates inter-organizational synchronization of demand and services associated with inventory logistics (Bowersox et al., 1999).

Logistics operators need to effectively manage information, integrating the various logistics activities to improve the flow of physical products to its customers. The sharing of information is a key element for cooperation between partners (Branski & Laurindo, 2013).

From these approaches, the following hypotheses can be presented for information sharing as an important attribute of services capability:

H3a: The greater the information sharing, the greater the satisfaction of logistics service providers with the customer.

H3b: The greater the information sharing, the greater the perceived performance by logistics service providers.

In B2B relationships, managers must focus their attention on the development of aspects that establish the difference, such as technical competence or the strength of the company's reputation to create differentiation and greater value to service delivery (Marquardt et al., 2011). The guided scope for innovation has also contributed to boost the supply of new and differentiated logistics services (Hult, 2002; Wang & Lalwani, 2007; Daugherty et al., 2009). The hypotheses related to competence attributes of logistics service providers to serve clients are:

H4a: The higher the logistics competence, the greater the satisfaction of logistics service providers with the relationship with the customer.

H4b: The higher the logistics competence, the greater the perceived performance by logistics service providers.

Logistics service providers are at the interface of: a) manufacturing plants, transporting and managing product inventories and components of raw material suppliers, manufacturers of the final product under

their own brand or third party brand; and b) distributors and retailers, carrying consumer goods and providing services to the end customer. To manage efficiently and effectively the customer related aspects can lead to economic strategies and decisions that take into account the value generated for this customer. In this approach, the PBL (Performance-Based Logistics) emerges as a theoretical proposal to manage complex structures of specific supply chains, whose provision of information and activity synchronization are crucial for customer service (Randall et al., 2011). The hypotheses that can be tested for the customer service approach are:

> H5a: The higher the customer service management, the greater the satisfaction of logistics providers with this client.

> H5b: The higher the customer service management, the greater the perceived performance by logistics service providers.

2.4 Satisfaction and performance of logistics providers

Ralston et al. (2013), while examining the RBV model in the logistics environment, confirmed that relevant resources logistics have an impact on innovation and differentiation in providing services as well as on the company performance. The empirical study confirms once again that resources lead to capability, and this one to performance, showing that competitive advantage over competitors is achieved by developing a higher level of logistics service or through an attribute that the customer values, which may be related to price.

Logistics is presented by the flows of information and materials, and both require excellent customer service. Whether in view of the SSP or RBV, logistics attributes related to information sharing, logistics services and customer service must be performed at levels that provide satisfaction and better performance (Defee & Stank, 2005) for the company that, under the B2B perspective, is providing customer service. This articulation is necessary for the logistics service provider keep developing its role in the SC (Sachdev & Merz, 2010). The hypothesis that can be presented in this context is:

H6: The higher the satisfaction of the logistics service provider with the customer relationship, the better the performance of this logistics service provider.

The theoretical model of research, presenting the 13 hypotheses to be tested, is shown in Figure 3, with their respective constructs which are inserted in the theoretical B2B approach between logistics providers and their clients. In this model, the organizational structure with greater autonomy or greater formality tends to influence services capability, identified by information sharing, logistics competence and customer service management which, in turn, tend to influence the logistics provider's performance that is represented by satisfaction and financial performance acquired by this supplier through the relationship developed with its customer.
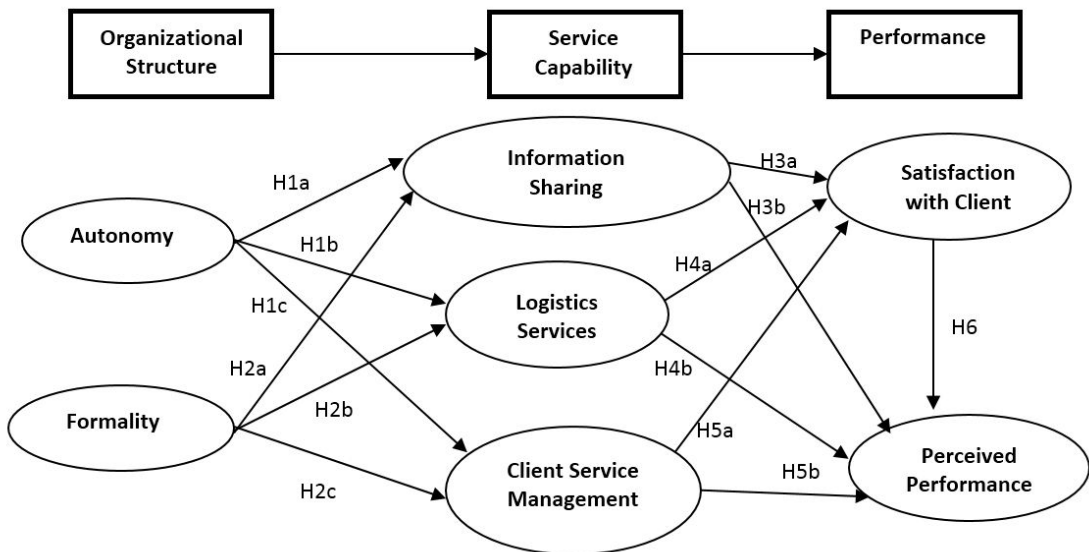

Figure 3. Theoretical Model of Research and its hypotheses. Source: Sachdev & Merz (2010).

3 Research method

The research is descriptive, conducted through a survey, and aims to confirm which characteristics of a B2B relationship, from the perspective of logistics service providers and according to the RBV approach, have an impact on their performance. Furthermore, it is intended to describe the characteristics of logistics professionals, essential members for the supply chain operation, by determining the correlations between selected variables and testing the assumptions made in the theoretical model. This methodology is confirmed by Tripodi et al. (1983), Marconi & Lakatos (2003) and Gil (2008).

3.1 Research instrument

The survey questionnaire was fully translated into Portuguese, adapting some terms and expressions to the Brazilian logistics jargon. The already validated questionnaire (Sachdev & Merz, 2010) consists of multiple scales that give rise to the seven constructs of the research model (Figure 3), distributed in 37 questions. The questions were answered on scales ranging from 1 to 7, where 1 is "strongly disagree" and 7 "strongly agree", regarding aspects related to the main customer served by the logistics providers respondents. The scale of measurement of the construct "financial performance" ranged from 1 to 5, where 1 means "much worse" and 5 "much better", comparing the performance of the respondent logistics product/service with that one of its main competitor. The questionnaire was electronically generated through the Google Drive tool that created a link through which the respondent was able to mark their answers.

3.2 Study population

The research universe is characterized by the suppliers of logistics services, transport, customs stations, storage, inventory control, maritime port agents and inland dry port, located in southern Brazil, in the states of Parana, Santa Catarina and Rio Grande do Sul, or providing services to customers in this region. In the beginning, the intention was to make inferences about logistics companies that were located or were serving customers in the state of Rio Grande do Sul. Given the small number of formal businesses, registered and expert in logistics, it was decided to extend the research to the states of Santa Catarina and Parana.

Up to 405 companies formally registered in associations, members of the transport and cargo handling federation, which in fact perform logistics operators functions in the three states. This geographical area was chosen for convenience of easy access to those service providers and the proximity to the institution where the research group is located.

3.3 Data collection

The logistics service providers companies were accessed by phone. In this contact, the professional responsible for the logistics operation expressed interest in participating in the research, answering immediately by phone or requesting to send the survey link by email. The return rate, even of those companies that in an initial contact agreed to participate in the survey, was around 20%. All questionnaires answered by telephone had their responses inserted directly into the electronic questionnaire on Google Drive and were automatically sent to the database. A total of 82 questionnaires were completed and returned. The response time either by phone or using the link did not exceed 15 minutes, and the data collection took six months.

3.4 Research sample

Among 82 returned questionnaires, two were eliminated from the analysis due to problems with the responses. In one of the questionnaires, all responses were located in the center of the scale, and the construct named performance had no response at all. The other questionnaire had a large number of unanswered questions, which resulted in only one response to a construct with six questions.

The final sample was composed by 80 logistics service providers for industrial, commercial or retail client companies, featuring a B2B relationship, considered as representative of the study population.

In cross-sectional surveys like this, 15% of the population is the minimum acceptable limit for the sample to satisfactorily represent the objective reality (Hair et al., 2010). The 80 companies sample means 19.75% of the 405 companies that characterize the study population.

3.5 Data analysis

Data were analyzed using descriptive statistics and structural equation modeling to test the 13 hypotheses of the research model and to identify which characteristics, related to organizational structure, contribute to the ability of the services, and both for the performance of logistics providers in context of B2B relationships with customers.

According to Davcik (2014), structural equation modeling is more robust and less sensitive to sample size than exploratory multivariate analyses. The author discusses some successful rules to infer the appropriate sample size for research in

management which generally use measurement scales. He points that at least three indicators are needed to measure each construct, and that, according to Chin & Newsted (1999), multiplying 10 observations by the construct that has the largest number of measurement indicators it is possible to obtain the minimum sample size.

SmartPLS suitable for small samples and structural models with measurement latent variables or constructs (Monecke & Leisch 2012) was the software used for data analysis. It is a specialized software for path modeling based on the PLS – Partial Least Squares method.

The LV-PLS technique (Latent Variable - Partial Least Squares) was considered the most appropriate to test the 13 hypotheses (Figure 3) due to concomitant presence of exogenous and endogenous latent variables in the research theoretical model (Byrne, 2010). Statistical significance, to confirm the hypotheses and other correlation analysis between variables, is admitted at the 0.05 level. The bootstrap technique was used in statistical analysis once it allows elucidating the sampling distribution of a given parameter by re-sampling with replacement from the original sample and maintaining its same size. This method has high precision and is free of any theoretical assumption about the variables (Marôco, 2010).

A Confirmatory Factor Analysis (CFA), used to test or confirm a pre-specified relationship (Hair et al., 2010), was performed (Table 1) to verify the correlation between each measurement item and the respective constructs of the research model (Figure 3), which are: autonomy, formality, information sharing, logistics services, client service management, satisfaction with client, and perceived performance. For Byrne (2010), the CFA is appropriate when the researcher has some knowledge about the latent variables, on which he makes assumptions about measuring items relations with their constructs and among the constructs themselves. Loadings factor, correlation of each measurement item with its respective construct (Table 1), smaller than 0.5 must be relativized, because even with a practical significance, a maximum of 25% of the variance of that item is explained by the factor or construct. The higher the absolute value of the factor loadings, the better is the interpretation of the factorial matrix (Hair et al., 2010; Marôco, 2010). It is seen in Table 1 that, for the research sample of 80 logistics providers, correlations between measurement items and their respective constructs (factorial loadings) are greater than 0.700, except for three items, one in Customer Service Management (0.4597), another in Logistics Service (0.4865) and the last one in Performance (0.6327). It is possible

to confirm that the large majority of measurement items has at least 50% of the variance explained by the respective construct or factor, which reveals practical and statistical significance at 0.05 level (Hair et al., 2010).

Cronbach's alpha, a reliability measure to ensure that the items are measuring the same construct, confirmed by the high inter-correlation between them, must have a minimum acceptable value of 0.600 (Hair et al., 2010). The only construct with the value below the minimum was the Customer Service Management with $\alpha = 0.5609$, indicating caution in further analyzes with this construct (Table 1).

Another important analysis, providing greater reliability to data analysis results, is the Average Variance Extracted analysis (AVE). This measure reflects the overall amount of variance of measurement items that is explained by the latent construct. This is a complementary measure of the construct reliability value. Guidelines suggest that the extracted variance should exceed 0.500 for a construct (Hair et al., 2010). It can be seen from Table 1 that AVE lowest value is 0.504 for the Customer Service Management construct, attending to the minimum acceptable limit. Table 1 also indicates a low variance explained (R^2) for two endogenous constructs of the research model: Information sharing (0.1653) and Satisfaction (0.0669).

Based on CFA results presented in Table 1, and in theoretical recommendations, data analysis techniques to test hypotheses may be carried out.

4 Results

The sample with 80 valid questionnaires was analyzed, showing that logistics service providers who responded to the questionnaire operate predominantly in the supply chain located in the state of Rio Grande do Sul (Table 2).

Most of these logistics providers have the distributor/retailer followed by manufacturers of end products, its main customers in the chain (Table 2). The type of product/service provided to customers is chiefly characterized by transport, followed by storage. By questioning these logistics service providers about features of the product/service sold to the major customer, its nature was characterized, on average, as technical, standardized, complex and with a little profit margin. The small and medium size of most logistics service providers, combined with standardization of the rendered service, is configured as a reasonable explanation for the low internal competitiveness, as manifested by these suppliers.

Table 3 shows the test discriminant validity of the constructs, indicating that the structural research

Table 1. CFA of constructs of research model.

Observed Variables/ Measurement Items	Autonomy	Formality	Information Sharing	Logistics Services	Client Service Management	Satisfaction with Client	Perceived Performance
Client gives *feedback* of our products/services.	0.335	0.459	0.163	0.199	**0.842**	0.252	0.275
Review of failures due to the client loss.	0.435	0.311	0.249	0.406	**0.769**	0.300	0.274
Clients are the most important factor to the company.	0.063	0.249	0.166	0.062	**0.460**	0.148	-0.197
Search of prior solutions for logistic troubles.	0.520	0.505	0.323	**0.816**	0.349	0.284	0.415
Reverse logistics operations are developed.	0.438	0.371	0.452	**0.486**	0.306	0.078	0.273
Logistic services differentiate themselves from the competitors.	0.427	0.475	0.154	**0.745**	0.303	-0.002	0.427
Creative solutions for specific situations and for clients.	0.532	0.371	0.237	**0.807**	0.196	0.179	0.433
Simplification of the general logistic process.	0.505	0.417	0.239	**0.796**	0.149	0.121	0.502
Consistent approach to the key performance of logistics.	0.428	0.483	0.081	**0.713**	0.252	0.127	0.442
Employees have strategic autonomy.	**0.777**	0.274	0.335	0.477	0.300	0.252	0.332
Employees have influence on the operational decisions.	**0.873**	0.387	0.385	0.632	0.435	0.110	0.475
Employees have operational autonomy.	**0.884**	0.380	0.256	0.514	0.394	0.060	0.482
A great number of rules and policies written.	0.437	**0.961**	0.108	0.552	0.546	0.233	0.475
Presence of manual with rules and procedures.	0.444	**0.954**	0.094	0.560	0.435	0.264	0.448
Presence of complete description of functions.	0.258	**0.861**	-0.067	0.444	0.402	0.053	0.287
Individual performance register for employees.	0.359	**0.889**	0.032	0.616	0.396	0.322	0.440
Sharing of operational information with selected providers and clients.	0.222	0.003	**0.795**	0.210	0.065	0.209	-0.061

Eigenvalue ≥ 1. Standardized variables from 0 to 1. Source: By authors based on analysis. Significance at 0.05 level. Source: The authors.

Table 1. Continued...

Observed Variables/ Measurement Items	Autonomy	Formality	Information Sharing	Logistics Services	Client Service Management	Satisfaction with Client	Perceived Performance
Database for information sharing.	0.293	0.128	**0.646**	0.171	0.281	0.017	0.023
Sharing of strategic information with selected clients.	0.388	0.022	**0.927**	0.355	0.259	0.217	0.190
According to our expectation, we are satisfied with this client relationship.	0.018	0.094	0.132	0.015	0.024	**0.785**	0.070
According to the ideal relationship, we are satisfied with this one.	0.225	0.283	0.199	0.176	0.272	**0.899**	0.241
The main client fulfills with the promises from the beginning of our relationship.	0.119	0.231	0.202	0.239	0.075	**0.899**	0.230
The relationship with the major client is positive.	0.090	0.137	0.124	0.099	0.157	**0.852**	0.133
Net profit margin in comparison to the major competitors.	0.407	0.294	0.082	0.428	0.182	0.220	**0.843**
ROA in comparison to the major competitors.	0.555	0.282	0.128	0.477	0.290	0.103	**0.793**
ROI in comparison to the major competitors.	0.354	0.267	0.053	0.425	0.114	0.127	**0.782**
Overall Competitive Position in comparison to the major competitors.	0.301	0.532	0.030	0.448	0.228	0.182	**0.633**
General Profitability in comparison to the major competitors.	0.323	0.347	0.075	0.387	0.300	0.224	**0.762**
AVE – Variance Extracted in each Construct	**0.716**	**0.841**	**0.636**	**0.542**	**0.504**	**0.739**	**0.586**
Cronbach's Alpha – Reliability of scales	**0.802**	**0.937**	**0.713**	**0.823**	**0.561**	**0.889**	**0.820**
R² for endogenous variables of the model	-	-	**0.165**	**0.549**	**0.313**	**0.067**	**0.365**

Eigenvalue ≥ 1. Standardized variables from 0 to 1. Source: By authors based on analysis. Significance at 0.05 level. Source: The authors.

model is acceptable for an exploratory analysis. The proof is given by the correlation between constructs that is less than the square root of AVE (Average Variance Extracted) for each construct, in accordance with the diagonal matrix (Fornell & Larcker, 1982). The result indicates that the model has discriminant validity among constructs.

In the test of hypotheses for the research model, the standardized β coefficients resulting from the relationship analysis between constructs (obtained

Table 2. Logistics Providers' Characteristics.

Characteristics of sample	Results
• **Total Respondents (N)**	80
• **Major Client**	
- Distributor / Retailer	36.3%
- Manufacturer of own brand final products or the manufacturer uses other firm brands in these products	25.0%
- Raw material supplier	20.0%
- Supplier of service and materials for manufacturing plants maintenance	8.7%
- Others	10.0%
• **Product/Service provided for this client**	
Transportation	56.3%
Transportation and storage	17.5%
Logistics in general	12.5%
Container stripping	8.7%
Receiving and storage	5.0%
• **Service/Product Characteristic for this major client**	Median at scale from 1 to 7
Technical/No Technical	4
Highly Standardized/Highly Personalized	4
Complex/Simple	4
Small Profit Margin/High Profit Margin	4
• **Number of employees of Logistic Providers**	
1 to 99 employees – Small size	72.5%
100 to 499 employees – Middle size	18.8%
Over 500 employees – Large size	8.7%

Source: The authors.

Table 3. Constructs discriminant analysis results.

	Autonomy	Formality	Sharing Information	Logistics Services	Client Service Management	Satisfaction with client	Perceived Performance
Autonomy	**0.846**	0	0	0	0	0	0
Formality	0.414	**0.917**	0	0	0	0	0
Sharing Information	0.389	0.052	**0.797**	0	0	0	0
Logistic Services	0.648	0.596	0.328	**0.736**	0	0	0
Client Service Management	0.450	0.488	0.256	0.349	**0.710**	0	0
Satisfaction	0.160	0.246	0.202	0.185	0.181	**0.860**	0
Perceived Performance	0.513	0.456	0.097	0.571	0.295	0.2239	**0.765**
AVE (Variance Extracted)	**0.716**	**0.841**	**0.636**	**0.542**	**0.504**	**0.7393**	**0.586**
R² of exogenous variables of model	-	-	**0.165**	**0.549**	**0.313**	**0.0669**	**0.3645**

Results on the diagonal correspond to the square roots of AVE from each construct. Results out of the diagonal are correlations among constructs. Source: The authors.

from results generated by the structural model LV-PLS with bootstrapping) and the significance of each relationship are shown in Table 4.

Summarized results of the research model (Figure 4) reveal that the organizational structure components,

related to both Autonomy and Formalization, are significant predictors of Services Capability constructs (H1a, H1b, H1c, H2b, H2c supported) exception to Information Sharing that cannot be predicted by Formalization (H2a not supported).

Table 4. Test of hypotheses results using bootstrapping.

	Hypotheses	Standardized β Coefficients	Bootstrapping Results		Significance p
			Standardized Statistics	Error t	
Autonomy - > Information Sharing	H1a	0.443	0.114	3.894	0.000
Autonomy - > Logistics Services	H1b	0.484	0.087	5.545	0.000
Autonomy - > Client Service Management	H1c	0.300	0.151	1.984	0.000
Formality - > Information Sharing	H2a	-0.132	0.157	0.838	n.s.
Formality - > Logistics Services	H2b	0.395	0.099	3.999	0.020
Formality - > Client Service Management	H2c	0.364	0.164	2.217	0,010
Information Sharing - > Satisfaction with client	H3a	0.1405	0.172	0.817	n.s.
.Information Sharing -> Perceived Performance	H3b	-0.140	0.132	1.058	n.s.
Logistics Services - > Satisfaction with client	H4a	0.101	0.151	0.666	n.s.
Logistics Services - > Perceived Performance	H4b	0.553	0.123	4.477	0.022
Client Service Management - > Satisfaction with client	H5a	0.110	0.2412	0.455	n.s.
Client Service Management - > Perceived Performance	H5b	0.115	0.171	0.673	n.s.
Satisfaction with client - > Perceived Performance	H6	0.129	0.106	1.222	n.s.

n.s.: no significant at 0.05 level. Source: The authors.
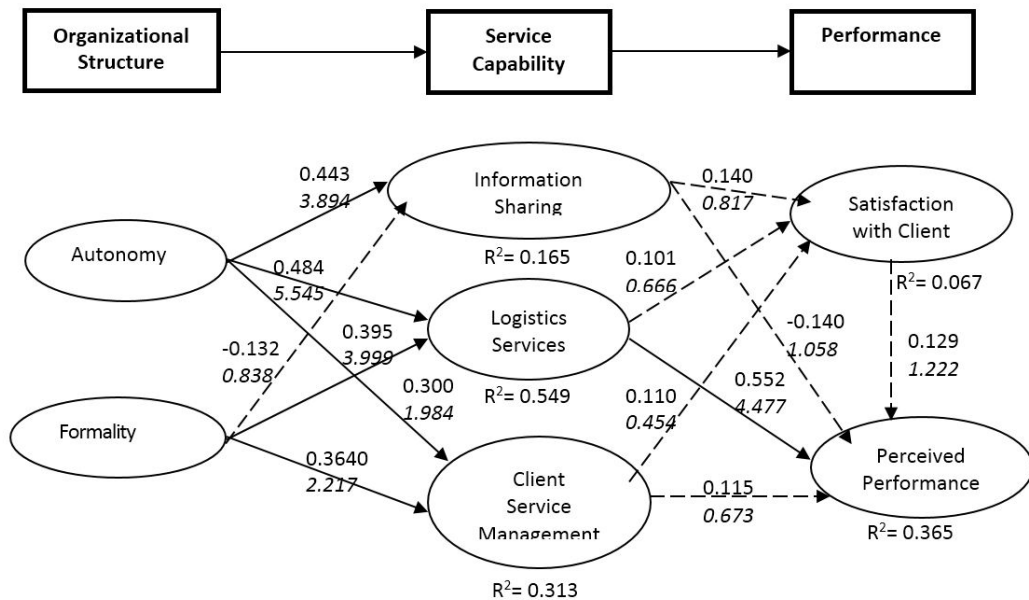
- - - - - No significant statistics relations.
Path coefficients correspond to standardized β-value

Figure 4. Relations between constructs – standardized β coefficients and statistic *t*.

The only construct that can be considered a Performance predictor (Table 4), with 36.5% of explained variance for Perceived Performance, is Logistic Services (H4b supported; H3b, H5b e H6 not supported). This is corroborated by Logistics Services, which can be predicted with 54.9% of variance explained by Organizational Structure constructs, related to Autonomy and Formalization. Logistics providers' satisfaction with their main client is not explained by Logistics Services Capacity constructs (H3a, H4a, H5a not supported). Therefore, the satisfaction with the client does not contribute to a better performance of these logistics operations.

5 Conclusion

A possible justification for Performance be explained solely by Logistics Services within Services Capability, and this one by Autonomy and Formalization within the Organizational Structure construct, is that logistics providers researched population, mostly located in the northeast of the state, usually is rewarded for technical quality and capacity of their operations, which generate direct and reciprocal impacts on their own performance and performance of client companies as well. Distributors and retailers, representing 36.3% (Table 1) of the business clients of logistics providers of the sample, belong mostly to the supply chains of metal-mechanic and metallurgical industry of Rio Grande do Sul state, providing auto parts for manufacturers of machines, manufacturers of light and heavy vehicles, and aftermarket retailers. The main service provided by these logistics operators to the main client of the supply chain is transportation (56.3% of the sample). According to Langley (2009) and Guidolin & Monteiro (2010), this service is considered as a basic activity of logistics, with lower added value. Dissatisfaction with its main client can be associated with traditional logistics that suppliers have developed for customers and also to the small size of most of these suppliers, who usually gets lower profit margin due to lower competitiveness in capacity and structure for the provision of services.

The culture of Brazilian companies in their various sectors compels for concrete results and objectives, which should reflect directly in the good performance of the companies, either suppliers or customers in the context of SC. It is possible that the Information Sharing and Customer Service Management, two constructs of Services Capability, are not being translated directly into concrete and practical results for the companies in the sample, due to the difficulty of measuring its effects on performance improving.

According to Barros (2009), the main reason for companies in Brazil outsource logistics activities is the cost reduction (81%), following the trend of other countries. The other reasons, all with response rates above 60%, are: focus on core business, increase logistics service levels, bring greater efficiency in carrying out operational activities, reduce investment in assets, and gain greater flexibility in logistics operations. Logistics providers, even if the sample cannot be considered representative of the population because it has involved only companies in southern Brazil, once again demonstrate to be aligned with the research conducted throughout the country in 2009.

In the context of RBV, the feature that the logistics suppliers sample is emphasizing B2B customer relations, contributing to the improvement of their performance in the competition, is based on the ability of these suppliers: present preliminary solutions to logistical problems, develop reverse logistics, offer logistics services that differentiate from competitors, develop creative solutions for specific situations and for customers, simplify the overall logistics process and present a consistent approach to key logistics performance, even though predominantly oriented for transportation. These actions correspond to the variables that comprise the Logistics Services construct.

6 Research limitations

The obtained results are valid for the analyzed sample consisting of 80 logistics providers in supply chains. To generalize the results or make statements about the logistics providers' population of the south of Brazil is not intended. Such aim can be achieved in future studies by increasing the sample size from 100 to 200 cases. However, the care observed in the selection of data analysis techniques, among which the option for the SmartPLS software with bootstrapping, attenuates the 80 companies sample effects, and has allowed a greater reliability in results interpretation.

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