THE MEDIATION OF DELIVERY CAPABILITY IN THE RELATIONSHIP BETWEEN INFORMATION SHARING AND OPERATIONAL PERFORMANCE IN THE SUPPLY CHAINS OF THE CAPITAL GOODS SECTOR

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ABSTRACT

The purpose of this study was to verify the influence of the delivery capability on the relationship between the information sharing and the operational performance of companies in the capital goods sector. For this purpose, the research was divided into two stages. In the first stage, spontaneous interviews were conducted with ten representatives, including directors, managers and coordinators, from companies in the capital goods sector. In the second stage, a descriptive research was carried out with 68 companies using a data collection instrument, constructed from the theoretical reference and the spontaneous interview. In this phase, descriptive statistics, factorial analysis and the modeling of structural equations were used. The results showed that there was a positive and non-significant relationship between information sharing and operational performance, positive and significant between information sharing and operational capability, and between operational capability and operational performance. The results showed that the capability of delivery, in the companies surveyed, acts as mediator of the relationship between information sharing and operational performance. Finally, it is suggested the continuation of this research with the extension of the sample, replication in other sectors and the inclusion of other collaborative practices.

Keywords: Supply chain; Information Sharing; Delivery Capability; Operational Performance.

1. INTRODUCTION

The current market is characterized by frequent changes and by meeting the needs of customers, who demand products and services with lower costs, better quality, with agile and reliable delivery (Thatte et al., 2013). In order to meet these demands, companies must adopt strategies to improve their operational capabilities (Abdallah et al., 2014) and thus improve their performance.

This best performance will only be achieved if supply chain components seek collaborative practices (Soosay *et al.*,2008). Information sharing, among other collaborative practices, will lead to benefits at different levels of planning and process control (Vereecke *et* Muylle, 2006).

Operational capabilities, in turn, are improved by integration between firms and their suppliers (Abdallah et al., 2014), understanding quality, flexibility, and delivery as the key operational capabilities a company must choose to compete (Vanpoucke *et al.*, 2009).

Companies with a strong operational capability efficiently deliver better quality products through the flexible use of processes, resources and knowledge, as well as increasing the cost efficiency with the innovation of operations (Zhang *et al.*, 2013).

Thus, in the context of supply chain management, this study defined the research problem as: Is there mediation of delivery capability in the relationship between information sharing and operational performance in capital goods companies?

As a general objective, the study sought to verify whether the capability of delivery mediated the relationship between information sharing and operational performance in the supply chain of companies in the capital goods sector in Brazil and, as specific objectives: a) verified the relationship between the sharing of information with the delivery capability in the study companies; b) verified the relationship between the information sharing in the supply chain and the operational performance in these companies and c) verified the relationship between delivery capability and operational performance.

After the introduction, the study contemplated the theoretical reference on supply chain management, information sharing, delivery capability and operational performance. Methodological procedures were then defined. Finally, the data were analyzed for the final conclusion and recommendations for the continuation of the research.

2. THEORETICAL REFERENCE

Collaboration in the supply chain

The Supply chain is an autonomous network of organizations, which results from links of different processes and activities that produce value in the form of products and services (Christopher, 2001; Green Jr. et al., 2006). Supply chain management involves arrangements in a series of activities (Li et al., 2008), with the purpose of increasing the long-term performance of companies (Mentzer *et al.*, 2001).

Supplier relations, communication, and information sharing are collaborative practices necessary to create an effective supply chain (Wong et Wong, 2011). Collaboration among supply chain participants can be the key to improving processes in organizations, involving chain participants at both ends, to improve customer service, reduce costs, and increase performance (Green Jr. *et al.,* 2006).

Supply chain collaboration can be defined in two major groups: process focus and relationship focus (Cao et Zhang, 2011). Thus, collaboration can be defined as a process in which independent companies work together to deliver products to final consumers, seeking to optimize results and create competitive advantage (Simatupang *et* Sridharan, 2008).

Collaboration, with a focus on relationships, has been defined as the formation of long-term partnerships in which members of the supply chain work together and share information, resources and risks to achieve common goals (Cao *et* Zhang, 2011).

Information Sharing

Collaboration can be described as a type of relationship between organizations that involve, among other factors, the sharing of information (Soosay et al., 2008). Information sharing tends to improve operations in terms of speed and agility (Kohli et Jensen, 2010), varying between strategic and tactical information (Bratić, 2011) and allows the decision-making process to be more effective (Simatupang *et* Sridharan, 2008).

Information sharing is related to the transparency and availability with which information is exchanged between the participants in the chain (Liu et al., 2013) and can be understood as the way companies exchange relevant, accurate, complete and confidential information, plans, and procedures in a timely manner with its supply chain partners, and it is described, inter alia, as the life force and key requirement for supply chain collaboration (Cao *et al.*, 2010).

Delivery Capability

Capabilities reflect strategies that result in adaptation, integration, reconfiguration and resource utilization and organizational skills (Gligor et Holcomb, 2012). Operational capabilities, in turn, are related to the use of existing skills and practices (Zhang et al., 2013) and can be defined as integrating a complex set of skills performed by an organization to improve its outputs from more efficient use of their productive capacities, technologies and materials flow, reducing operation costs (Nath *et al.*, 2010).

The company's ability to quickly meet customer needs (Bowersox et al., 2014) can be a source of competitive advantage, which includes on-time delivery and fast delivery (Danese *et* Romano, 2011).

On the other hand, Chung et Swink (2009) related the operational capabilities to the performance of companies, defining as delivery capability the accuracy of delivery, availability, deadlines and speed of delivery.

Among the benefits associated with superior customer delivery, among others, is the continuous improvement of the company in relation to the product delivery system, effectively adapting to the strategy (Paulraj *et* Chen, 2007).

Operational Performance

In organizations performance is usually related to financial indicators, which can be measured by sales growth, profitability, return on assets, among others. On the other hand, operational performance is measured by indicators that reflect the organization's technological efficiency (Venkatraman *et* Ramanujam, 1986).

Liu et al. (2013) differentiated operating performance from business performance for company results. Thus, operational performance refers to a company's improvement over its competitors and business performance refers to the financial performance of a company. The ability to measure operational performance is critical, mainly because the operational targets are not aligned as the financial targets (Mentzer, 2004).

In today's world, the internal processes of suppliers and the management of these processes have increased in importance; supplier performance directly influences the performance of multiple partners and the chain as a whole (More *et* Basu, 2013).

3. METHODOLOGY

Construction of the Theoretical-Empirical Model of Measurement and Research Method

After describing the theoretical basis of the constructs, we came across a set of interrelated and combined issues that are capable of affecting administrative decisions. In this sense, this series of questions has theoretical and administrative importance. For this reason, the structural equation modeling technique was adopted to examine the relationships between the collaborative practice of information sharing, delivery capability, and operational performance. It is particularly useful when analyzing a number of dependency ratios simultaneously. Thus, the theoretical-empirical model illustrated in Figure 1 was constructed.
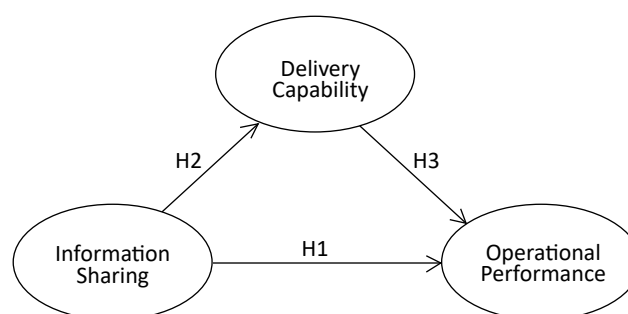

Figure 1. Guiding model of the study
Source: The authors

Through the investigation, the goal was to confirm or refute the existence of the relationships between the constructs: the collaborative practice of information sharing, delivery capability and operational performance, using the following hypotheses:

- Hypothesis H1: The sharing of information with its suppliers positively affects the operational performance of the capital goods manufacturer.

- Hypothesis H2: The sharing of information with its suppliers positively affects the delivery capability of the capital goods manufacturer.

- Hypothesis H3: The delivery capability positively affects the operational performance of the capital goods manufacturer, and,

- Hypothesis H4: The delivery capability mediates the relationship between the information sharing and the operational performance of the capital goods manufacturing company.

With respect to Hypothesis H4, what was sought was to analyze whether the performance of information sharing occurred, via the delivery capability.

Research Method

The research was divided into two stages. In the first stage, spontaneous research was used, using the technique of in-depth interview, semi-structured or individual type with focus (Aaker *et al.*, 2001).

A research protocol was defined for the application of the data collection instrument (Yin, 1994), considering the schedule of the interviews, the location where they would be performed, the approximate duration, the form (face-to-face or via Skype) and the general instructions on the application of the questionnaire.

The research universe included companies in the capital goods sector. The sample was composed of 10 companies of this sector, all multinational and with operations in Brazil in more than one industrial unit.

A semi-structured questionnaire was used as a data collection instrument, with the objective of covering a list of subjects and making it possible to verify facts or attitudes not originally predicted and that could be explored during the interview (Aaker *et al.*, 2001).

Nine interviews were conducted in person and one through Skype, due to the impossibility of traveling to the city of the interviewee. After the transcripts of the ten interviews, content analysis was used (Bardin, 1977), in order to identify what was reported on a specific topic (Vergara, 2006). For the spontaneous interview, it was emphasized that the information and examples were related to the current company and not to the experiences previously lived by the respondent.

After the content analysis and the necessary adjustments, the data collection instrument used in the second stage of the research was finalized. In this step, the quantitative method was used, by using questions and hypotheses of research to specifically focus the object of the study (Creswell, 2007).

The final questionnaire was divided into blocks. In the first block, we sought to characterize the respondents, the companies, the identification of the main motivating factor for the purchase of capital goods, the type and time of relationship between capital goods manufacturer and its suppliers. The following blocks included assertions related to collaboration (information sharing), delivery capability (compliance, speed and deadlines) and operational performance (cost reduction and process improvement).

For this phase, the research instrument was composed of a structured questionnaire with assertions related to the constructs established in the model. The scale used was of the Likert type of five positions.

In order to perform the pre-test, five companies were invited to evaluate the respondents' understanding of the concepts presented, the questionnaire format, the understanding of the assertions used, and thus validate the final data collection instrument.

After completing the questionnaire, a non-probabilistic sample was chosen, where the selection of the population elements depends, at least in part, on the researcher's decision (Mattar, 1998) and on accessibility (Vergara, 2000).

Descriptive statistics were used to treat the data collected through the frequency distribution and as measures of central tendency to mean, mode and median. The Kruskal-Wallis nonparametric test was used to verify the existence of differences between the answers according to the employee's position and size of the company (number of employees). Afterwards, the factorial analysis and associated key statistics were used: a) Bartlett sphericity test (BTS); b) Communality; c) Eigenvalue; d) Kaiser-Meyer-Olkin (KMO) suitability measure; e) Percentage of Variance. In the rotated matrix the Varimax process was used (Malhotra, 2001). To verify the reliability of internal consistency, the Cronbach Alpha coefficient was used. For treatment, validation and testing of data, in this second phase of the research, the IBM SPSS software was used.

For the hypothesis tests and evaluation of the statistical significance of the research guiding model, the structural equations method was used using the software SmartPLS 2.0.M3. The Sobel, Aroian, and Goodman tests were used to verify whether the mediation relation of the delivery capability was supported from the structural coefficients and standard errors. Finally, the GoF (Goodness of Fit) criterion was used as an operational tool to validate the model globally (Tenenhaus *et al.,* 2005).

The questionnaires were sent by e-mail, with the possibility of reply by Word file attached to the e-mail or by link to Google Docs. More than one questionnaire was accepted per company, provided they represent different business units or different areas of action of the respondents within the same company. They returned 126 questionnaires from 68 companies, corresponding to 17.0% of the companies selected for the survey.

The limitations of the method are related to sample size, questionnaire submission and response via e-mail or Google Docs. In addition, it was not possible to guarantee that the respondent was the person selected or appropriate to respond to the questionnaire. Another limitation of the method is related to the sample selection criterion (non-probabilistic and convenience), may lead to limitations of the results and conclusions.

Analysis of data and results

Exploratory research

According to the respondents, the main motivating factor for purchases in the capital goods sector was the innovation and replacement of obsolete equipment. The type of relationship between the capital goods manufacturing company and its suppliers was quite diverse, with a focus on strategic alliances and formal contracts between companies. The time of relationship between the company that manufactures capital goods and its suppliers in the companies surveyed was more than five years.

The content analysis of the interviews showed that the companies of the sector adopted collaborative practices, where the sharing of information was related to the technical issues in specific projects and should be improved in relation to the exchange of strategic information between the companies.

In the companies participating in the spontaneous research, a search for a greater relationship and collaboration with the main suppliers could be observed. The content analysis of the interviews allowed consolidating the final questionnaire, which was sent to companies in the capital goods sector.

Quantitative research

Regarding the profile of the respondents, in the second stage of the survey, 81% had a management position (directors, managers and coordinators) with a predominance of the managerial role (54.8%). The majority of the interviewees were composed of engineers (55.6%) and administrators (27.8%), with work time in function over five years (70.6%) and time in the company also exceeding five years (76.2%).

Regarding the size, the majority of the respondents worked in companies characterized as small, 53 responses (42.1%) with up to 99 employees and 63 responses (50%)

with a turnover of less than R\$ 90 million. The midsize ones represented 25 responses (19.8%), with a number of employees between 100 and 499 and 17 responses (13.5%) with revenues between R\$ 90 million and R\$ 300 million. The other responses were related to companies classified as large, with more than 500 employees (48 answers - 38.1% of the total) and revenues above R\$ 300 million (46 replies - 36.5% of the total).

Regarding the issue of which would be the main motivating factor for purchases, innovation was pointed out by 64.3% of the respondents, replacing equipment by 34.9% and only one respondent pointed to tax incentives as the main factor. The participating companies had a long-term relationship with their main suppliers, with 81.7% over five years.

In the item related to the characteristics of the relationships between the company and its main suppliers, strategic alliances and collaboration were identified by 24.6% of the respondents as the main characteristic of the relationship between the capital goods company and its suppliers, followed by strategic alliances (23.0%) and strategic alliances and legal contracts (15.9%), while the spot purchases, which characterize the lower relationship between the parties, had the lowest percentages, as can be seen in Table 1. This information, coupled with the relationship time between companies, leads one to infer that companies in the capital goods sector surveyed are seeking new forms of collaborative relationship with the most relevant suppliers in their supply chain.

Table 1. Type of relationship with key suppliers

Type of relationship	Frequency	Percentage	Accumulated
Strategic Alliances and Collaboration	31	24,6	24,6
Strategic Alliances	29	23,0	47,6
Strategic Alliances and Legal Contracts	20	15,9	63,5
Collaboration	17	13,5	77,0
Legal contracts	8	6,3	83,3
Strategic alliances and Spot Shopping	7	5,6	88,9
Spot Shopping	6	4,8	93,7
Spot Shopping and Collaboration	4	3,2	96,9
Legal contracts and Spot Shopping	3	2,4	99,3
Legal Agreements and Collaboration	1	0,8	100,0
Total	126	100,0	

Source: The authors

Regarding the frequency distribution of assertions related to information sharing, delivery capability and operational performance, it was observed that, for all assertions presented, the degree of agreement was greater than the degree of disagreement, with emphasis on assertive DO3, related to more efficient processes, with the highest degree of agreement (96.0%) and for the IN2 assertion, regarding the sharing of strategic information, with the lowest degree of agreement (61.1%), as seen in Table 2.

Also in Table 2, the statistical significance (p) for the difference between the means of the samples, significant for ($\alpha \leq 0.05$), is shown using the Kruskal-Walis non-parametric test. Regarding the respondent's position (KW-1), it was observed that there were differences between the responses of directors, managers, coordinators and other positions for assertions DO1 (Logistic Costs) and DO4 (Rework Costs). In relation to the size of the companies according to the number of employees (KW-2), it was verified that, for the IN2 (Strategic Information Sharing) assertion there were significant differences when compared with the small (<99 employees), average (between 100 and 499 employees) and large companies (more than 500 employees).

Table 3 presents the factor analysis calculations. The commonalities of the assertions were higher than 0.5, with the exception of assertive DO1, which was in 0.313, OD5 with 0.427 and EN2 with 0.481, which would imply the necessity of exclusion of the items or in the extraction of a greater number of factors. The other associated statistics were then checked to evaluate whether the factorial analysis was adequate for the data treatment. Also in this Table the KMO

tests, used to evaluate the adequacy of the factor analysis, are shown, where values between 0.5 and 1.0 indicate that the factorial analysis is adequate (Malhotra, 2001). It is observed that the KMO test was equal to 0.639, which shows a low adequacy of the data for factorial analysis (Hair Jr. *et al.,* 2005).

Bartlett's sphericity test is used to examine the hypothesis that the variables are uncorrelated in the population (Malhotra, 2001), values of significance greater than 0.100 indicate that the data are not suitable for treatment by factorial analysis. In this research, the values of significance were equal to 0.000, which shows the adequacy of the factorial analysis for the data treatment. The minimum accumulated variance for these factors was 57.442%, lower than the required minimum of 60%, which validates with caveats to the extraction of four factors. The Cronbach's Alpha (α) coefficient was 0.773, indicating a satisfactory reliability of the internal consistency.

Based on data from the anti-image correlation matrix, we excluded the variables DO1 (Logistic Costs) and DO4 (Rework Costs), with the lowest MSA/KMO values for the individual variables (Hair Jr. et al., 2005). The new distribution of components in the factor analysis is presented in Table 4.

In Table 4, it can be verified that the commonalities for the assertive DO5, EN1 and EN2 were below 0.5, but the KMO was 0.699, which shows reasonable adequacy of the data for the factorial analysis (Malhotra, 2001) and the Bartlett test was equal to 0.000, which again allows us to confirm the adequacy of the factorial analysis for the data treat-

Table 2. Frequency of responses (%) attributed to assertions

		SD (1)	D (2)	N (3)	A (4)	SA (5)	Medium	Fashion	Median	Standard deviation	KW -1	KW -2
IN1	Relevant Information	-	4,0	16,7	37,3	42,1	4,17	5	4,00	0,849	0,958	0,461
IN2	Strategic Information	2,4	7,1	29,4	25,4	35,7	3,85	5	4,00	1,066	0,078	0,042
IN3	Reciprocal Information	-	3,2	20,6	47,6	28,6	4,02	4	4,00	0,790	0,080	0,712
IN4	Information in Time	-	-	12,7	39,7	47,6	4,35	4	4,00	0,696	0,650	0,060
DO1	Logistic Costs	1,6	7,9	22,2	31,7	36,5	3,94	5	4,00	1,026	0,045	0,772
DO2	Productivity Standards	-	1,6	10,3	44,4	43,7	4,30	4	4,00	0,719	0,614	0,415
DO3	Efficient Processes	-	-	4,0	31,7	64,3	4,60	5	5,00	0,567	0,240	0,447
DO4	Rework Costs	0,8	-	11,9	27,0	60,3	4,46	5	5,00	0,766	0,042	0,165
DO5	Production Costs	-	5,6	10,3	45,2	39,9	4,17	4	4,00	0,830	0,540	0,838
DO6	Reduced Stops	1,6	3,2	18,3	38,1	38,9	4,10	5	4,00	0,916	0,089	0,523
EN1	Delivery on Time	-	2,4	8,7	38,1	50,8	4,37	5	5,00	0,745	0,446	0,517
EN2	Delivery Conformity	0,8	0,8	4,0	26,2	68,3	4,60	5	5,00	0,682	0,326	0,568
EN3	Fast Delivery	-	1,6	9,5	34,9	54,0	4,41	5	5,00	0,730	0,385	0,844

Note: KW-1 refers to the Kruskal-Wallis test (respondent's position) and KW-2 (number of employees)
SD (Strongly Disagree), D (Disagree), N (Neutral), A (Agree) and SA (Strongly Agree)
Source: The authors

Table 3. Exploratory Factorial Analysis

Assertions		Components				
		1	**2**	**3**	**4**	**Com.**
IN1	Relevant information	**0,700**	0,212	0,044	-0,134	0,555
IN2	Strategic Information	**0,753**	0,129	-0,064	0,099	0,597
IN3	Reciprocal Information	**0,685**	-0,116	0,253	0,344	0,666
IN4	Information in Time	**0,679**	0,113	0,179	-0,055	0,509
DO1	Logistic Costs	0,130	0,331	**0,404**	0,153	0,313
DO2	Productivity Standards	0,136	**0,846**	0,067	-0,159	0,764
DO3	Efficient Processes	0,315	**0,657**	-0,087	0,335	0,651
DO4	Rework Costs	0,120	0,235	0,156	**0,692**	0,573
DO5	Production Costs	0,088	**0,463**	0,442	-0,098	0,427
DO6	Reduced Stops.	-0,055	**0,607**	0,465	0,336	0,700
EN1	Delivery on Time	0,103	-0,026	**0,822**	0,000	0,688
EN2	Delivery Conformity	0,228	0,251	0,296	**-0,528**	0,481
EN3	Fast Delivery	0,510	0,124	**0,448**	-0,253	0,540
	Eingenvalue	3,630	1,554	1,261	1,020	

MSA/KMO = 0,639   AVE (*Average Variance Explained*) = 57,442%

Bartlett test = 0,000   Cronbach' *Alpha* (α) = 0,773

Source: The authors

ment. The minimum cumulative variance for these factors was 54.662%, which validates with caveats to the extraction of three factors. Cronbach's Alpha (α) coefficient was 0.764, indicating satisfactory reliability.

Table 4. Confirmatory Factor Analysis

Assertions		Components			
		1	**2**	**3**	**Com.**
IN1	Relevant Information	**0,655**	0,125	0,256	0,510
IN2	Strategic Information	**0,782**	0,139	-0,054	0,634
IN3	Reciprocal Information	**0,720**	0,055	0,075	0,526
IN4	Information in Time	**0,641**	0,046	0,318	0,514
DO2	Productivity Standards	0,123	**0,763**	0,162	0,624
DO3	Efficient Processes	0,378	**0,712**	-0,195	0,687
DO5	Production Costs	0,050	**0,500**	0,427	0,435
DO6	Reduced Stops	-0,037	**0,767**	0,232	0,643
EN1	Delivery on Time	0,063	0,193	**0,617**	0,421
EN2	Delivery Conformity	0,096	0,053	**0,661**	0,449
EN3	Fast Delivery	0,422	0,067	**0,622**	0,569
	Eigenvalue	3,369	1,488	1,156	

MSA/KMO = 0,699   AVE (*Average Variance Explained*) = 54,662%

Bartlett test = 0,000   Cronbach' *Alpha* (α) = 0,764

Source: The authors

In order to verify the statistical significance between the constructs in the presented model, the software SmartPLS 2.0.M3 (structural equations) was used in two stages. The first one tested the direct relationship between the collaborative practice of information sharing and the operational performance of the capital goods manufacturer. In a second step, the capability of delivery as a mediating variable between information sharing and operational performance was included in the model.

Figure 2 contemplates the results of the SmartPLS 2.0.M3 software for the direct relationship between information sharing and operational performance.

According to Hair Jr. et al. (2005), the correlation coefficient can be used to evaluate the presence, direction and strength of the association. According to the same author, the strength of the association may be mild (≤0.20), small (≤0.40), moderate (≤0.70), high (≤0.90) or very strong (≤1.00). The relationship between information sharing and operational performance was positive with a value of 0.357, which may be considered small but defined. All assertions were maintained although some of the coefficients were less than 0.7, minimum value for these coefficients (Chin, 1998).

The statistical significance of the correlations between the constructs was measured, based on the calculation of the bootstrapping of the software SmartPLS 2.0.M3. Also shown in Figure 2 are the results of the "t" statistic, considering a significance of 5% for values greater than 1.960 and 1% for values above 2.576. Thus, both the first and second order factors were supported for a significance of p<0.01.
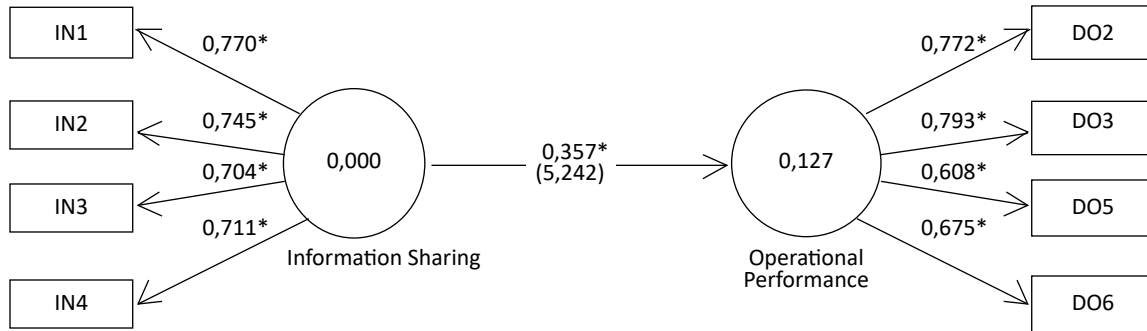
Figure 2. Direct relationship between constructs
Note: * statistical significance p<0,01
Source: The authors

Afterwards, the influence of the mediating variable delivery capability on the relationship between information sharing and operational performance was verified, as can be observed in Figure 3.

It can be observed that there is a positive relationship between the Information Sharing and Delivery Capability constructs. Positive and of lower intensity for the relations Information sharing - Operational Performance and Delivery Capability - Operational Performance (Hair Jr. *et al.,* 2005). The statistical significance of the correlations between the constructs was measured, showing that the relationship between information sharing and delivery capability was supported for a statistical significance of p <0.01 and between delivery capability and operational performance was supported for a significance of p<0.05.

The results confirmed that the information sharing between the capital goods company and its suppliers positively influenced the operational performance (Hypothesis H1) in the direct relation between the constructs (Figure 2), not being repeated when included the mediator variable capacity of delivery (Figure 3). Between information sharing and delivery capability (Hypothesis H2) there is a positive relationship. Hypothesis H3 was also confirmed, positive relation between delivery capacity and operational performance. Comparing the direct relationship between information sharing and operational performance (Figure 2) and then the indirect relationship (Figure 3) with the mediating presence of the delivery capability, and the way Hypotheses H2 and H3 were statistically significant, it can be deduced that there is a mediation of the delivery capability, in the relation between information sharing and operational performance (Hypothesis H4).
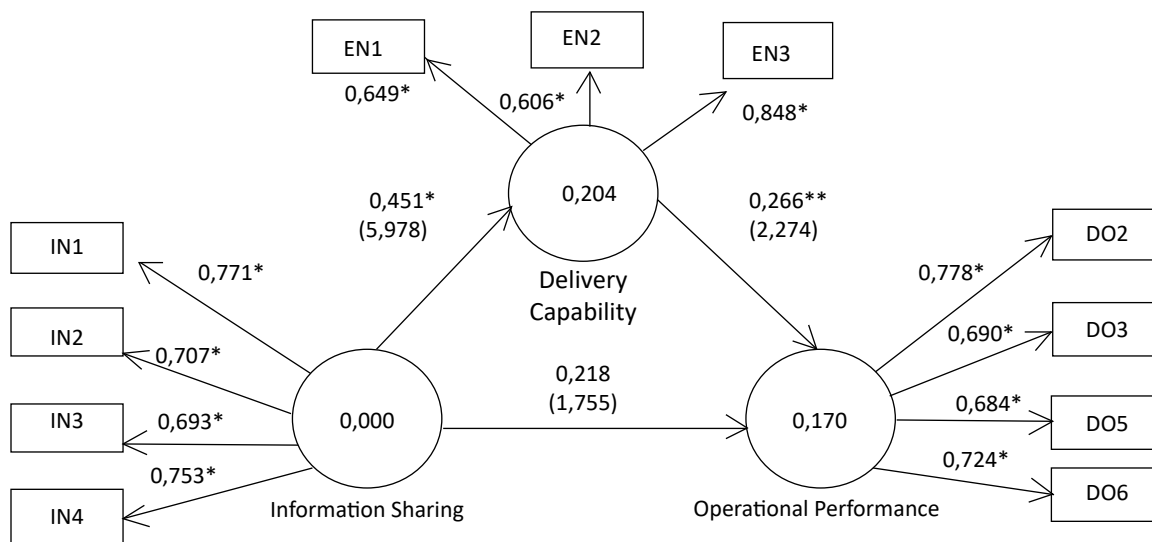

Figure 3. Indirect relationship between the constructs (study model)
Note: * statistical significance p<0,01 and ** statistical significance p< 0,05.
Source: The authors

For Baron et Kenny (1986) a variable is mediator when: a) variations in the independent variable (information sharing) produce variations in the mediator variable (delivery capacity); b) Variations in the mediator variable produce variations in the dependent variable (operational performance) and c) when the mediator variable is inserted in the model, the relationship between the independent variable and the dependent variable becomes non-significant. Conditions "a" and "b" were met with structural coefficients of 0.451 (information sharing and delivery capability) and 0.266 (delivery capacity and operational performance). For condition "c", there was a reduction in the structural coefficient from 0.357 (p<0.01) to 0.218 (p>0.05), which was not significant, thus confirming the delivery capacity as a mediator variable.

The Sobel, Aroian and Goodman test confirms the mediation of the delivery capability in the relationship between information sharing and operational performance, at the significance level of p<0.05.

Finally, the value of GoF (Goodness of Fit) was 0.31 (31%), which, according to Wetzels et al. (2009), it can be considered that the study model had a good performance.

4. CONCLUSION AND SUGGESTIONS FOR CONTINUATION

In the exploratory and descriptive research, it was possible to verify that the relationships of the manufacturing company with its suppliers were long term (over five years) and that they migrated from the more traditional relations of buying and selling (spot purchases) to alliances and collaboration.

The long-term relationship between companies and the changing form of relationship between the purchasing and supplying company form the basis for the creation, maintenance and enhancement of collaboration in the supply chains. Alliances and legal contracts involve relationships of commitment between supplier and buyer (Paulraj et Chen,2007).

The descriptive analysis of the assertions presented in the research evidenced a high degree of agreement regarding information sharing (> 61.1%), delivery capacity (> 88.9%) and improvements in operational performance (> 68.2%), showing that among the companies surveyed there is a search for collaborative practices as a way to improve their operational performance. By the Kruskal Wallis test, it was still found that there were few differences in the answers, considering the respondent's position and the size of the company (number of employees).

In relation to the hypotheses presented, the sharing of information between the buying and supplying company of the chain positively affects the operational capabilities. Thus, in order to improve these capabilities or for internal improvements in operations to take effect, it is of fundamental importance to deepen the collaborative practices in the supply chain. Sharing information is a key factor for improving the delivery capability of both the purchasing company and the supplier.

Delivery capability affects operational performance, which leads one to infer that it is the way to achieve the best operational performance of organizations. Despite this, the way to achieve this better performance necessarily involves collaboration between companies in the supply chain.

Finally, the latter implication referred to the mediating role of delivery capability and its influence on the relationship of information and performance in the supply chain. The improvement of this capability is an important factor in achieving the best results of the chain of capital goods sector, which is of extreme relevance, since despite the increasing migration of operations and the purchase of components and parts of equipment in other countries, the industry continues with a strong industrial presence installed in Brazil.

It should be emphasized, however, that the conclusions of this study were limited by the size of the sample, the criterion of choice of participants and the research instrument adopted in the two stages of this study.

Thus, it is suggested to continue this research: a) enlarge the sample size; b) examine differences in other sectors of activity and c) include in the research other collaborative practices, such as resource sharing, synchronized decisions and creation of common knowledge.

The study was consistent in showing the relationship between information sharing, delivery capacity and operational performance in companies in the capital goods sector in Brazil, as well as confirming the mediation of the operational capability of delivery in this relationship.

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