



What type of cooperation with suppliers and customers leads to superior performance?



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ABSTRACT

This research evaluates cooperation with key suppliers and customers, correlating cooperation to financial performance. Four cooperative behaviors represent cooperation as a multidimensional concept and the research explores the effect of each of these different dimensions of cooperation on performance. Results show that not all cooperative behaviors have similar and positive impacts on performance. Flexibility has no significant effect while shared problem solving has a negative effect. The other two cooperative behaviors, information exchange and restraint in the use of power, have positive impacts on performance. Results also indicate that cooperation with customers affects mostly firm growth while cooperation with suppliers affects firm profitability. Based on a survey of 124 packaging manufacturers, the analysis uses CFA (Confirmatory Factor Analysis) to validate the measurement of constructs and multiple regressions to analyze the relationships between the cooperative behaviors and financial performance.

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1. Introduction

The marketing literature describes opportunities for value creation and performance outcomes that can result from improved coordination and a better understanding of customers (Jap, 1999; Lindgreen & Wynstra, 2005; Morgan & Hunt, 1994; Palmatier, Dant, Grewal, & Evans, 2006). Scholars researching supply chain (Heikkilä, 2002; Krause, Handfield, & Tyler, 2007; Simatupang & Sridharan, 2005), operations management (Cao & Zhang, 2011; Carr & Pearson, 1999; Chen, Paulraj, & Lado, 2004), and those adopting the relational view of strategy (Dyer, 1997; Dyer & Hatch, 2006; Dyer & Singh, 1998; Mesquita, Anand, & Brush, 2008) reinforce the benefits of cooperative relationships.

Despite conceptual and empirical support for the existence of a positive relationship between cooperation and performance, several scholars partially dispute it. Turnbull, Oliver, and Wilkinson (1992) report the difficulty that companies from the United Kingdom face in replicating Japanese cooperative practices; Burnes and New (1997) warn against exaggerating the beneficial effects of cooperative relationships; Combs and Ketchen (1999) identify that the effect of cooperation on performance is dependent on the relationship context; and Vereecke and Muylle (2006) find only a weak relationship between cooperation and performance. Villena, Revilla, and Choi (2011) identify an inverted-U relationship between cooperation and performance

showing that too much cooperation may have a negative effect on performance.

Research design and definition of constructs and their indicators can account for some of these inconsistencies. One of the underexplored topics is the definition of cooperation. Although cooperation is a rich and complex concept with several dimensions (Heide & Miner, 1992) most studies focus on a specific aspect of cooperation and treat it as unidimensional. This research uses four cooperative behaviors as Heide and Miner (1992) propose to represent the idea of cooperation – information exchange, flexibility, joint problem solving, and restraint in the use of power. These cooperative behaviors represent different types of cooperation that can have different effects on performance as results of this study indicate.

The relationship between cooperation and performance is probably context-dependent in terms of whether it relates to suppliers or customers. In addition, different economic activities can vary in terms of their propensity to foster cooperative behavior among organizations, since institutional environment has been recognized as a determinant of cooperation (Lui & Ngo, 2005; Mesquita, Lazzarini, & Cronin, 2007). Organizational culture, individual and organizational values among other aspects, also influence cooperative behavior (Bercovitz, Jap, & Nickerson, 2006; Koza & Dant, 2007). Different research settings and samples can produce different results. This paper investigates a very specific industry context – packaging for consumer goods – and considers both cooperation with customers and with suppliers. It also evaluates the effect of cooperation in two different financial performance dimensions: growth and profitability. The sample consists of 124 Brazilian packaging manufacturers. The data analysis uses CFA (Confirmatory factor analysis) to validate the

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scales and multiple regressions to evaluate the relationship between the scores for the four cooperative behaviors with suppliers and with customers with financial performance. The results indicate that the cooperative behaviors have different effects on financial performance and that not all behaviors have positive effects. Cooperation with suppliers affects mainly profitability while cooperation with customers affects mainly growth.

2. Cooperation

This section defines cooperation, discusses its dimensionality, reviews the relationship between cooperation and performance, and formulates the hypotheses of this study.

2.1. Defining cooperation

Cooperation is a widely used term in academic business literature discussing the relationship between economic agents. It refers to the joint activity between partners to accomplish mutually compatible goals that would otherwise be unfeasible or costly (Chen, Chen, & Meindl, 1998; Maloni & Benton, 2000; Metcalf, Frear, & Krishnan, 1992; Palmatier et al., 2006; Parkhe, 1993; Stern & Reve, 1980). Each agent believes the other to be necessary in achieving a goal. Stern and Reve (1980) explain that values must be compatible and the benefits of joint activity shared by the agents involved.

Behaviors and goals are central to the definition of cooperation. Most studies (e.g., Cravens, Shipp, & Cravens, 1993; Geyskens, Steenkamp, & Kumar, 2006; Morgan & Hunt, 1994) treat cooperation as unidimensional considering that it is one single phenomenon with different levels. Some researchers, however, measure cooperation through the idea of cooperative behaviors and they conceptualize cooperation as a multidimensional phenomenon. Multidimensionality implies that there are several types of cooperation or cooperative behaviors. The number and types of cooperative behaviors vary in different researches. The behavior most studied is information exchange because of the influence of two fields: supply chain management and industrial marketing.

Heide and Miner (1992) propose four types of cooperative behaviors: information exchange, restraint in the use of power, shared problem solving, and flexibility. Information exchange refers to agent action of sharing both proprietary and public information. It also refers to the unplanned, voluntary, and informal communication characteristics of a cooperative relationship. Restraint in the use of power refers to the degree to which agents refrain from taking advantage of opportunities that may negatively affect partners. This behavior differs from altruism because it reflects concern for ongoing, future, and long lasting partnerships. Shared problem solving refers to the search for solutions and the acceptance of joint responsibility for undefined problems by the agents concerned, in an effort to maintain the relationship. Flexibility assesses the degree to which agents adjust their own behavior to accommodate the needs of others. Managers can revise contract conditions if one party becomes disadvantaged.

Johnston, McCutcheon, Stuart, and Kerwood (2004) measure three different cooperative behaviors – shared planning, flexibility and response with respect to changes in relationship dynamics, and joint responsibility for common operational tasks. Mesquita and Brush (2008) also use three cooperative norms – information exchange, flexibility, and solidarity. Solidarity refers to reciprocity and fairness in joint activities between partners. Wilson and Nielson (2001) propose four types of cooperative behavior – information sharing, flexibility, harmony between firms, and joint working between firms, which are closely related to the behaviors proposed by Heide and Miner (1992). Nyaga, Whipple, and Lynch (2010) examine both supplier and customer perspectives and use three cooperative behaviors – information sharing, joint relationship effort, and dedicated investments. While information sharing and joint relationship effort are cooperative behaviors included

in the Heide and Miner (1992) conceptualization, the behavior of dedicated investments is related to the creation of specific assets covered in the transaction cost theory.

Although no consensus exists about the number and types of cooperative behaviors, Heide and Miner (1992) proposition of four cooperative behaviors seems to be the most comprehensive approach including most aspects covered by other authors.

2.2. Cooperation and performance

Firms engage in cooperation because of the potential gains from joint action between agents. Most studies claim that cooperation can increase the competitive advantage for the firms involved in a cooperative endeavor (e.g., Cravens et al., 1993), or they can provide enhanced operational performance (e.g., Frohlich & Westbrook, 2001; Simatupang & Sridharan, 2005). Cooperative inter-organizational relationships allow firms to take advantage of dissimilar assets held by partners to improve growth and profitability (Combs & Ketchen, 1999), and to better manage environmental uncertainty (Cravens et al., 1993). With fewer resources a firm can achieve the same or even better performance. Joint action can speed-up market entry (Combs & Ketchen, 1999). Kalwani and Naranyandas (1995) confirm a positive performance benefit for those suppliers that establish a cooperative relationship with customers. Cooperation can foster the creation of relational resources that can provide relational rents for both partners (Dyer, 1996, 1997; Dyer & Hatch, 2006; Mesquita et al., 2008).

A few studies fail to confirm the benefits of cooperation. Vereecke and Muylle (2006) explore cooperation with both suppliers and customers and find only a weak relationship between cooperation and operational performance. Prahinski and Benton (2004) find no association between cooperative buyer–suppliers relationships and supplier's performance. Fynes, Voss, and Búrca (2005) find only partial support for the impact of supply chain relationships (including cooperative elements) and performance. Villena et al. (2011) use social capital theory to argue that there are disadvantages to excessive cooperation, confirming inverted-U shape relationship between social capital and performance.

Turnbull et al. (1992), based on an exploratory study of the automotive industry, believe that gains derived from cooperative behaviors are context dependent and that factors such as industry structure, rivalry, and culture and moderate cooperative gains. Combs and Ketchen (1999) and Mesquita et al. (2007) also confirm the context dependency of cooperation effects. Context can explain some of the mixed findings, but the operationalization of cooperation can be another relevant reason. Almost all studies do not consider the multidimensional nature of cooperation.

The few studies that consider cooperation as multidimensional using the cooperative behaviors do not investigate the effects of the cooperative behaviors on performance. Heide and Miner (1992) explore the relationship characteristics that promote the cooperative behaviors. Cooperation is their dependent variable. Wilson and Nielson (2001) use the cooperative behaviors as formative variables of a global cooperation construct. This global cooperation promotes strategic benefits and trust. They do not explore the direct and differential effects of the cooperative behaviors on performance. Mesquita and Brush (2008) use the cooperative behaviors as components of an aggregated construct: relational governance. They find that relational governance has positive impact on production and negotiation efficiency. Nyaga et al. (2010) investigate the effect of cooperative behaviors on trust and commitment. Trust and commitment are positively related to satisfaction with results, satisfaction with relationship, and operational performance. Johnston's et al. (2004) study is the only study that attempts to investigate the direct effect of cooperative behaviors on performance. They use only three cooperative behaviors – flexibility in arrangements, shared planning, and joint

responsibility – and explore their effect on buyer's perception of relationship performance. Flexibility and shared planning have positive effects on performance. The study has, however, several limitations. They do not cover all cooperative behaviors, their sample spans several industries including one third of respondents from the public sector, and their operationalization of performance includes eight optional perceptual items covering financial and operational aspects.

Although these studies explore the different types of cooperation, most investigate what determines the cooperative behaviors or their effect on other relational constructs, such as trust, commitment or an integrative concept of cooperation. The direct and differential effect of cooperative behaviors on performance is unexplored.

2.3. Hypotheses

This study uses the four cooperative behaviors proposed by Heide and Miner (1992) – information exchange, restraint in the use of power, shared problem solving, and flexibility – to measure different types of cooperation. These four behaviors are assessed for both the relationships with customers and for the relationships with suppliers. Since the literature that explored the effect of each of these cooperative behaviors on performance is limited, the hypotheses of this study follow the majority of studies that indicate a general positive effect of cooperation on performance.

H1a: Flexibility in the relationship between producer and supplier promotes producer superior performance. H1b: Flexibility in the relationship between producer and customers promotes producer superior performance. H2a: Information exchange between producer and supplier promotes producer superior performance. H2b: Information exchange between producer and customers promotes producer superior performance. H3a: Restraints in the use of power between producer and supplier promotes producer superior performance. H3b: Restraints in the use of power between producer and customers promotes producer superior performance. H4a: Shared problem solving between producer and supplier promotes producer superior performance. H4b: Shared problem solving between producer and customers promotes producer superior performance.

3. Firm performance

Firm performance is complex, and no consensus exists regarding its dimensions (Combs, Crook, & Shook, 2005). Venkatraman and Ramanujam (1986) propose three overlapping domains: financial performance, operational performance, and organizational efficacy. Glick, Washburn, and Miller (2005), in an extensive review of performance studies, conclude that although most studies recognize the multidimensionality of performance, they frequently treat it as a single dimension.

Financial performance can have second-level dimensions. Combs et al. (2005), in a review of empirical studies, identify three second-level dimensions: profitability, growth, and market value. A conceptual reason for treating profitability and growth as separate constructs is the definition of competitive advantage as superior economic value creation (Peteraf & Barney, 2003). Building on Brandenburger and Stuart (1996), economic value is defined as a wedge between willingness-to-pay and the economic cost incurred by a firm. Price splits the value created by the firm into customer surplus and economic profit (Barney & Clark, 2007). Customer surplus, the difference between the willingness to pay and price, is a driver for growth. Economic profit, the difference between price and economic cost, determines profitability measures. Profitability and growth are complementary indicators of competitive advantage.

Growth and profitability may have different relations with other constructs. Cho and Pucik (2005) investigate the effect of innovativeness and quality on performance and find different effects on growth and profitability. Quality promotes profitability, but has no direct effect

on growth. Innovativeness promotes growth, but has no direct effect on profitability. The effect of quality on growth is fully mediated by innovativeness and the effect of innovativeness on profitability is fully mediated by quality. The cooperative behaviors measured for the relationships with suppliers and for the relationships with customers can potentially have differential effects on growth and profitability.

This research analyzes financial performance using the two dimensions of growth and profitability. This approach comprehensively captures the effect of cooperation on competitive advantage.

4. Method

4.1. Sample and data collection instrument

The questionnaire development process included a preliminary qualitative phase. Six semi structured qualitative interviews with industry experts helped to adjust items to the packaging industry context. These interviews also provided valuable insights for the interpretation of results. A first pretest with a group of three academics and three industry practitioners followed by a larger-scale pretest with 40 industry practitioners (who did not participate in the final sample) allowed adjustments and a preliminary estimation of the psychometric properties of each item.

Following Heide and Miner (1992), this research measures four dimensions of cooperation: flexibility, information exchange, shared problem solving, and restraint in the use of power. Each of these dimensions uses three or four items adapted from Heide and Miner's (1992) original scales. The questionnaire uses the same items for customers and suppliers, with minor adjustments to wording. The respondents rate their agreement with each statement (item) using a five-point Likert scale, averaging their three most relevant customers and suppliers.

The two dimensions of financial performance – profitability and growth – use three items each. The respondents rate how they had been performing in terms of profitability and growth against their direct competitors during the last three years using a five-point scale (from clearly worse to clearly better).

Since no complete directory of packaging manufacturers is available in Brazil, this research created a list of 754 firms from various industry associations. These packaging manufacturers received a questionnaire, assuring confidentiality, in a dedicated web site. Data collection site had controlled access by password and monitored IP address. Four rounds of data requests from October 2007 to February 2008, achieved a response rate of 16% (124 valid questionnaires). ABRE (Brazilian Association of Packaging) was instrumental in supporting this process. Response rate and total number of respondents are similar to other studies exploring the buyer–supplier relationships (Carey, Lawson, & Krause, 2011; Villena et al., 2011).

Non-response bias does not seem to be a problem since ANOVA tests for each item comparing the four rounds of respondents could not find significant differences (Armstrong & Overton, 1977). Sample consists mainly of middle-sized companies (48% with 101 to 500 employees and 43% with 12 to 120 R\$ millions annual sales) from the main packaging and market segments. Table 1 presents the full profile of the sample. Respondents are typically senior managers or directors possessing a strategic understanding of the business and knowledge regarding the relationships with suppliers and customers (the questionnaire stated this requirement). Relationships have a maturity of typically more than five years allowing time for the development of cooperation. Table 2 presents the full profile of the respondents and of the relationships.

4.2. Common method bias

Common method bias is a possible threat to validity because the study collects data for the dependent variables using the same instrument and the same informants. Several procedural measures mitigate

Table 1
Profile of the sample.

	Frequency	%
<i>Number of employees</i>		
Less than 50	23	19%
51–100	13	10%
101–300	30	24%
301–500	29	23%
More than 500	29	23%
	124	100%
<i>Total annual sales (Brazilian Reais—millions)</i>		
Less than 6.00	25	20%
6.01–12.00	12	10%
12.01–60.00	29	23%
60.01–120.00	25	20%
120.01–240.00	16	13%
More than 240.00	17	14%
	124	100%
<i>Packaging type</i>		
Metallic	12	10%
Carton	12	10%
Flexible	32	26%
Rigid	39	31%
Other	29	23%
	124	100%
<i>Market segments</i>		
Food	78	63%
Beverages	42	34%
Feedstuff	17	14%
Cosmetics	78	63%
pharmaceutical	55	44%
Other	40	32%

this bias: contact assured respondents' anonymity and confidentiality; questionnaire uses different scales for dependent and independent variables to avoid scale-effect communality; and extensive pretests of the scales with academics and practitioners reduced item ambiguity (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). The Harman's one-factor test (Podsakoff & Organ, 1986) based on a factor analysis on all items does not detect a general factor. Thus, common method bias does not present a significant problem.

Table 2
Profile of survey respondents and relationships.

	Frequency	%
<i>Titles of respondents</i>		
Senior manager	48	39%
Director	29	23%
President	6	5%
Owner	18	15%
Other	23	19%
	124	100%
<i>Average age of customer relationship</i>		
Up to 2 years	7	6%
2.1–3.0	6	5%
3.1–5.0	17	14%
5.1–10.0	41	33%
More than 10.0	53	43%
	124	100%
<i>Average age of supplier relationship</i>		
Up to 2 years	9	7%
2.1–3.0	3	2%
3.1–5.0	12	10%
5.1–10.0	40	32%
More than 10.0	60	48%
	124	100%

4.3. General approach to data analysis

Analysis has two steps. The first step uses Confirmatory Factor Analysis (CFA) to establish dimensionality, validity, and reliability of construct measurement. The outcome of this step is the creation of summated scales for each construct by averaging the scores of each item loading into the construct. The second step uses two ordinary least squares (OLS) multiple regressions to test the hypotheses about the relationships between the different dimensions of cooperation with customers and suppliers and financial performance. One regression uses growth as dependent variable and the other profitability.

Analysis used SPSS 13.0 and Amos 16.0. Section 5 presents the measurement models and discusses the use of CFA in more detail. Section 6 presents and discusses the two regressions in testing the hypotheses.

5. Measurement models

Descriptive analysis of the items does not show relevant deviations from univariate normality. Skew indexes vary from -1.20 to $+0.20$, and kurtosis indexes vary from -0.75 to $+1.23$. Kline (2005, p. 49–50) suggests that skew indexes greater than 3 and kurtosis indexes greater than 10 are a source of concern for the use of maximum likelihood estimation. Data characteristics are far from those limits. The analysis checked for multivariate outliers by group of constructs (cooperative behaviors and financial performance) using Mahalanobis distance, and discarded one observation.

Because of sample size limitations, CFA analysis uses three sets of constructs: cooperative behaviors with customers (four constructs), cooperative behaviors with suppliers (four constructs), and financial performance (two constructs). The first two models have 84 degrees of freedom and are similar because they measure the same constructs with same items (minor wording adjustments) for customers and suppliers. Table 3 shows the summary of these analyses. Results confirm the proposed dimensionality of the four cooperative behaviors with acceptable fit indexes, all loads from latent variables to items positive and statistically significant ($p < 0.001$), and absence of localized areas of strain observing the residual matrices. The fit indexes for the customer model are: $\chi^2(84) = 150.11$, $p = 0.001$, CFI = 0.93, RMSEA = 0.08, and SRMR = 0.06. The fit indexes for the supplier model are: $\chi^2(84) = 125.26$, $p = 0.002$, CFI = 0.96, RMSEA = 0.06, and SRMR = 0.05.

Several aspects support scale validity. The process of item generation and selection, based on existing literature, expert opinion, and the pretest procedure, contributes to content and face validity (Nunnally & Bernstein, 1994). High factor loadings and extracted variance over 50% provide evidence of convergent validity (Shook, Ketchen, Hult, & Kacmar, 2004). Regarding cooperation with customers, information exchange has an extracted variance of 43.9% and flexibility has an extracted variance of 48.6%, but these figures are not too distant from the 50% limit and maintaining the items keeps consistency with Heide and Miner (1992) scales. High correlations between some cooperative behaviors are a threat to discriminant validity (Netemeyer, Bearden, & Sharma, 2003), however tests of all combinations of pairs of constructs support discriminant validity.

These tests compare the chi-square of the constrained model (correlation set to one) to the unconstrained one. As models are nested, the chi-square difference is a significance test for models comparison. If the chi-square difference is non-significant, the models are equivalent, and one cannot claim discriminant validity. All chi-square differences are significant ($p < 0.05$) supporting discriminant validity. Results also indicate acceptable construct reliability by the composite reliability index. All constructs exceed the minimum recommended value of 0.7 for composite reliability with the exception of information exchange with customers with 0.694. Collectively, these results provide evidence

Table 3
Confirmatory Factor Analysis – cooperative behaviors.

Items	Customers				Suppliers			
	Flexibility	Information exchange	Shared problem solving	Restraint in the use of power	Flexibility	Information exchange	Shared problem solving	Restraint in the use of power
Flex1	0.597				0.796			
Flex2	0.710				0.749			
Flex3	0.703				0.814			
Flex4	0.767				0.808			
Infor1		0.485				0.735		
Infor2		0.775				0.829		
Infor3		0.694				0.813		
Probl1			0.811					
Probl2			0.783				0.797	
Probl3			0.668				0.719	
Probl4							0.865	
Probl5			0.725				0.752	
Power1				0.800				0.759
Power2				0.823				0.781
Power3				0.712				0.828
Power4				0.701				0.746
Av. variance extr.	0.486	0.439	0.561	0.579	0.628	0.629	0.616	0.607
Composite reliability	0.789	0.694	0.835	0.845	0.871	0.836	0.865	0.861

of validity and reliability of the measurement models of cooperative behaviors allowing the creation of summated scales (average of items scores for each construct).

The financial performance model is simpler. Analysis suggested dropping one of the indicators for growth so the final model has three indicators for profitability and two indicators for growth. The final model has 4 degrees of freedom and presents good fit indexes: $\chi^2(4) = 4.32$, $p = 0.364$, CFI = 0.99, RMSEA = 0.02, and SRMR = 0.01. Table 4 shows the summary for this analysis.

Convergent validity is adequate because of the positive and significant loads ($p < 0.001$) and average extracted variance well above the 50% limit. Discriminant validity is clear by the chi-square test of nested models. The increase of the chi-square statistic is 95.8 while the limit value for $p < 0.001$ is 10.8 demonstrating that the constrained model has a significantly worse fit. Reliability is also adequate with composite reliability values above 0.90. Taken collectively, results indicate that scales are valid and reliable, allowing the creation of the summated scales. Table 5 presents the summary statistics for the summated scales.

6. Regression analyses and discussion

Ordinary least squares (OLS) regression is the analytical method chosen for hypotheses testing. The use of summated scales by averaging item scores minimizes non-normality potential problems. Multi-collinearity is a potential problem because of a number of high correlations as shown in Table 5. These high correlations are understandable, because the cooperative behaviors are different forms of cooperation and many studies treat cooperation as one single dimension. The standard way to assess the magnitude of the multi-collinearity problem is the variance inflation factor (VIF) scores for the variables in each regression model. VIF scores above 10 indicate a serious problem

Table 4
Confirmatory Factor Analysis – perceived financial performance.

Items	Profitability	Growth
Profit1	0.964	
Profit2	0.976	
Profit3	0.888	
Growth1		0.973
Growth2		0.846
Av. variance extr.	0.914	0.839
Composite reliability	0.970	0.912

(Cohen, Cohen, West, & Aiken, 2002). VIF scores are below 5, most below 3. Tests of alternative regression models by removing variables show consistency in coefficients and also VIF scores below 5. These results indicate that multi-collinearity is not a major concern. Influential observations can also be a potential problem in regression. Cook's distance values for all cases are below 0.09 suggesting that extreme cases are not present. Examination of regression residuals also does not show significant problems of deviation from normality or heteroskedasticity.

Explaining financial performance is complex given numerous influential factors (March & Sutton, 1997). The inclusion of control variables is highly desirable because at least a few alternative explanations are accounted for. This study includes firm size (recoded from the annual sales information) and three dummies for sub-sectors of the packaging industry. Size is a common control variable and can account for economies of scale and market power. The sample nature, examining a specific industry is also an external control.

Table 6 shows the results. The base model includes only the control variables while the complete model includes the cooperative behaviors for both customers and suppliers. The cooperative behavior of flexibility does not show any significant effect on neither profitability nor growth, failing to provide support for H1. Context-specific characteristics of the packaging industry may explain the result. In this industry, product specifications and delivery conditions are well established and frequent or relevant adjustments are unnecessary.

The cooperative behavior of information exchange has a limited effect on financial performance. Only information exchange with the suppliers has a positive effect on profitability but no significant effect on growth, offering limited support for H2. This positive effect of information exchange with suppliers on profitability may be related to the technical nature of the relationship. There are opportunities for additional value creation through the use of cheaper or better quality materials and technological innovation driven by suppliers. An illustration, identified in the qualitative part of this research, is the use of thinner films and associated savings in flexible packaging. Thinner films result from better extrusion technology, have similar performance characteristics than regular films, offer an attractive cost reduction for the end customer, and allow greater margins for the packaging manufacturer. The packaging manufacturer can identify such opportunities by linking information from the film supplier to specific customer needs. This type of value creation is an example of the transaction value idea of Zajac and Olsen (1993) and of the pie expansion phenomenon (Jap, 1999).

Table 5

Means, standard deviations and Spearman's correlations.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 Profitability	3.50	0.84										
2 Growth	3.77	0.93	0.60**									
3 Firm size	3.37	1.66	0.21*	0.24**								
4 Flex. – cust	3.38	0.94	0.10	0.26**	0.07							
5 Inf. Exch – cust	3.88	0.82	0.12	0.20*	0.01	0.44**						
6 Shared pr. solving – cust	3.74	0.92	0.09	0.18*	0.09	0.71**	0.69**					
7 Restr. use power – cust	3.32	1.05	0.18*	0.36**	0.05	0.64**	0.55**	0.76**				
8 Flex. – supp	3.05	1.08	0.16	0.23*	–0.05	0.58**	0.26**	0.35**	0.42**			
9 Inf. Exch. – supp	3.61	0.98	0.14	0.22*	0.00	0.30**	0.37**	0.33**	0.25**	0.52**		
10 Shared pr. solving – supp	3.62	0.92	0.04	0.22*	–0.12	0.49**	0.38**	0.47**	0.48**	0.64**	0.70**	
11 Restr. use power – supp	3.20	1.07	0.13	0.29**	0.01	0.57**	0.34**	0.53**	0.65**	0.65**	0.56**	0.76**

* $p < 0.05$.** $p < 0.01$.

Restraint in the use of power with customers has a positive and significant effect on both profitability and growth. However, the same cooperative behavior with suppliers does not have significant effects. These results offer partial support for H3, supporting H3b, but failing to support H3a. They demonstrate how cooperation with customers may differ from cooperation with suppliers. If a customer is satisfied with a certain packaging manufacturer, it can offer this manufacturer a larger share of its needs (at the expense of another supplier) and refer the supplier to other potential customers, creating opportunities for growth at no cost for the customer. This increase in volume can positively influence the packaging manufacturer's profitability from economies of scale in the future.

The cooperative behavior of shared problem solving with customers has a significant negative effect on growth and the shared problem solving with suppliers has a significant negative effect on profitability. Firms that cooperate with customers by taking a shared approach to problem solving experience slower growth and firms that have the same cooperative behavior with their key suppliers experience lower profitability. Despite no significant coefficients linking this cooperative behavior with customers to profitability (coefficient was negative but not statistically significant) and with suppliers to growth (coefficient

was close to zero), these results suggest the rejection of H3. Johnston et al. (2004) find a non-significant negative relationship between a similar cooperative behavior, joint responsibility, and performance. This finding, however, may be industry specific. Packaging manufacturers may incur substantial economic risk if the packaging is detrimental to the final product. Damage can exceed the value of the packaging itself extending to consumer health issues, recall costs, reputation and brand image. Clearly defined responsibilities and pre-defined arrangements are most likely a better option to problem solving than a shared approach.

This finding adds to the discussion that cooperation may not always be beneficial. Villena et al. (2011) propose that the relationship between social capitals (in many aspects social capital involves cooperative behaviors) has an inverted-U shape. Higher levels of cooperation produce decreasing benefits and at a certain point the net benefits of cooperation start to decrease because costs outweigh benefits. They do not differentiate between types of cooperation and cover multiple industries. The findings of this research suggest a possible alternative explanation. Higher levels of cooperation could relate to different contexts and include different cooperative behaviors that can be less effective or even have negative effects in performance. Different types of cooperation could be the cause of lower performance.

The last cooperative behavior, restraint in the use of power with customers, has a significant positive effect on both profitability and growth, but this type of cooperation with suppliers has no significant effect on financial performance. The results lend support to H4a, but are unable to support H4b. Restraint in the use of power can only occur when one of the parties has potentially more power than the other. In the packaging industry this situation occurs more likely in the relationship with customers. Customers, consumer goods companies, are frequently large multinational organizations, controlling large volumes and possessing bargaining power. Packaging manufacturers are frequently medium-sized companies and their suppliers fall in the same category.

While cooperation with suppliers does not seem to affect growth, cooperation with customers shows a marked effect on growth. Three of the four cooperative behaviors have statistically significant coefficients. Profitability shows a symmetrical pattern: cooperation with customers has almost no effect on profitability, with only restraint in the use of power having a positive effect. Cooperation with suppliers, however, has significant effects on profitability. Collectively, the results suggest that while cooperation with suppliers may lead to higher profitability, cooperation with customers promotes growth, probably because of context-related value creation and appropriation processes. Profitability gains from price premiums for the packaging firm come partially at the expense of a reduction in the customers' surplus, while gains in growth can mutually beneficial. The positive effect of restraint in the use of power in the relationship with customers on profitability also suggests this explanation.

Table 6

Effect of cooperative behaviors with customers and suppliers on financial performance – standardized coefficients.

Variables	Profitability		Growth	
	Base model	Complete model	Base model	Complete model
Control variables				
Size	0.23*	0.20**	0.24***	0.24***
Metallic packaging dummy	–0.17*	–0.15*	–0.09	–0.02
Carton packaging dummy	–0.10	–0.17*	–0.03	–0.10
Flexible packaging dummy	0.04	0.05*	–0.03	0.03
Cooperative behaviors with customers				
Flexibility		0.00		0.17
Information exchange		0.09		0.12
Shared problem solving		–0.19		–0.46***
Restraint in the use of power		0.27*		0.50***
Cooperative behaviors with suppliers				
Flexibility		0.20		0.10
Information exchange		0.25*		0.20
Shared problem solving		–0.30*		0.00
Restraint in the use of power		–0.01		–0.04
R ² (adjusted)	0.05	0.10	0.03	0.18
R ²	0.09	0.18	0.06	0.26
F	2.75	2.08	2.04	3.24
Observations/degrees of freedom	123/119	123/111	123/119	123/111

Note:

* $p < 0.10$.** $p < 0.05$.*** $p < 0.01$.

7. Conclusion

This paper addresses the issue of inter-firm cooperation effect on performance, with a study that decomposes cooperation into four different forms or dimensions. Additionally, this research examines these cooperative dimensions with both suppliers and customers in a specific business setting – Brazilian packaging manufacturers.

The study offers two main conclusions. First, not all forms of cooperation have similar effects and not all forms are beneficial. Shared problem solving with customers has a clear negative impact on growth and shared problem solving with suppliers has a negative impact on profitability. Shared problem solving is not an attractive practice in the relationships with suppliers and customers in the packaging industry. Some forms of cooperation, such as flexibility, do not significantly effect on financial performance in this context. Although, information exchange is widely used as a proxy of cooperation, in this study only information exchange with suppliers has a significant effect on profitability.

These findings have implications for research and practice. Research on cooperation should consider its multidimensionality. Aggregated forms of measurement do not capture the granularity of cooperation and may confound and mask its effects on other constructs. This is most important when considering multiple contexts in the same sample because these different contexts can promote different types of cooperation. Multidimensional scales, such as the one proposed by Heide and Miner (1992), better capture the cooperation phenomenon and need extension. Other dimensions of cooperation can exist and may be context-specific. Several opportunities for further research present themselves: Does shared problem solving always have a negative impact? What other variables moderate or mediate the effect of cooperation? An example of this type of research is Luo (2002), who identified an interaction effect between cooperation and contract completeness.

These findings also have implications for practice. Managers in the packaging industry should attempt to anticipate problems and clearly define responsibilities to avoid informal cooperation in treating the problems as mutual ones. Separating this type of cooperation from others may not be easy, but being aware of the situation may help to guide action. Although one cannot generalize these findings to other industries, it is worthwhile for managers to consider that cooperation has different types and that they may not always be beneficial to their firms.

The second conclusion indicates that cooperation with customers influences growth but has limited effects on profitability. On the other hand, cooperation with suppliers influences profitability but does not seem to affect growth. Previous research has explored the differential effect of cooperation on profitability and growth in a limited way, and several studies do not differentiate between growth and profitability (Carr & Pearson, 1999; Tan, Lyman, & Wisner, 2002). This differential impact on growth and profitability is also present in other characteristics or resources, as Cho and Pucik (2005) find in the case of quality and innovativeness. The explanation may be contextual, but its connection to the concept of competitive advantage is more general. If valuable resources can contribute to competitive advantage, increasing the willingness-to-pay or reducing the economic cost (Peteraf & Barney, 2003), then measuring profitability alone does not fully account for the value created – both profitability and growth are necessary (Brito & Brito, 2012). Cooperation with customers may create value increasing the customer surplus; however, when it comes to value appropriation, firms may be limited in the value portion they can appropriate directly. If more value is available to customers, they may reciprocate this by preferring the supplier, perhaps shifting volume from another supplier relationship, resulting in superior growth for the packaging manufacturer. Qualitative interviews conducted in early stages of this study support this interpretation. Cooperation with suppliers often results in new ideas or applications of specialty materials, allowing packaging manufacturers to offer innovative products and capture higher margins. Qualitative interviews indicated that product modifications due to

technological innovations (which frequently arise from an interaction with suppliers) can improve margins constantly eroded by competition.

This second conclusion has managerial implications regarding the expectations of cooperation efforts. Managers should not expect short-term gains in profitability from cooperation with customers. The short-term objective should be growth. Profitability can be positively affected in the longer term as a consequence of growth and economies of scale. However, profitability is a likely outcome from cooperation with suppliers. These results cannot be generalized since they may be specific to the packaging industry, and further research is needed in other industries.

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