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# Logistics Service Provider-Client Relationship: Comparing U.S.A and Brazil

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**Abstract** - The Authors compare the organization structure and market-based capabilities of American and Brazilian Logistics Service Providers in their respective countries. Using the resource based view approach, the authors propose that an LSP's organization structure influences its service capabilities, which in turn will influence satisfaction and performance. The results indicate that the individual models hold true in their respective countries. Autonomy enhanced LSP's capabilities in the areas of information sharing, logistics service, and customer service in both models. Formalization improved logistics and customer services in the Brazilian case, but only logistics services in the U.S. case. Unlike the U.S. model, service capabilities did not affect satisfaction for the Brazilian case; satisfaction did not contribute to performance for Brazilians. Paths of the two models are compared as part of the descriptive approach for the study and managerial insights provided.

**Keywords** - organization structure, cross-culture, resource based view, capabilities, country comparison

## ***Relevance to Marketing Educators, Researchers and/or Practitioners -***

Although Logistics Service Providers (LSPs) can increase the visibility and opportunities for obtaining new business for their clients, there are complaints and suspicions about their business practices. Thus, what may be turned into a long-term, healthy business alliance is held at a short term transaction-based and costly stage because of a lack of structure and poor performance in this

dyadic exchange. Although several research articles have discussed such cross-border logistical transactions, they are incomplete because of their lack in comparing the freight movement within the respective countries of trade. In this study, we sequence LSPs resources/capabilities along the lines of the structure, strategy, and performance framework. Using structural equation modeling, we compared and analyzed organization structure as predictors of service capabilities and these service capabilities as predictors of satisfaction and performance for Brazilian and U.S. LSPs to provide managerial implications.

## Introduction

Ever since the global production and distribution opportunities of goods increased, Logistics Service Providers (LSPs) experienced high growth and increased levels of competition simultaneously (Marasco, 2008). Although several research articles have discussed cross-border logistical transactions pertaining to these LSPs, they are incomplete because of their lack in comparing the freight movement within the respective countries of trade. Besides what, where, and how an item is produced, the logistics services need to be understood and coordinated in its entirety (Humphrey, 2003).

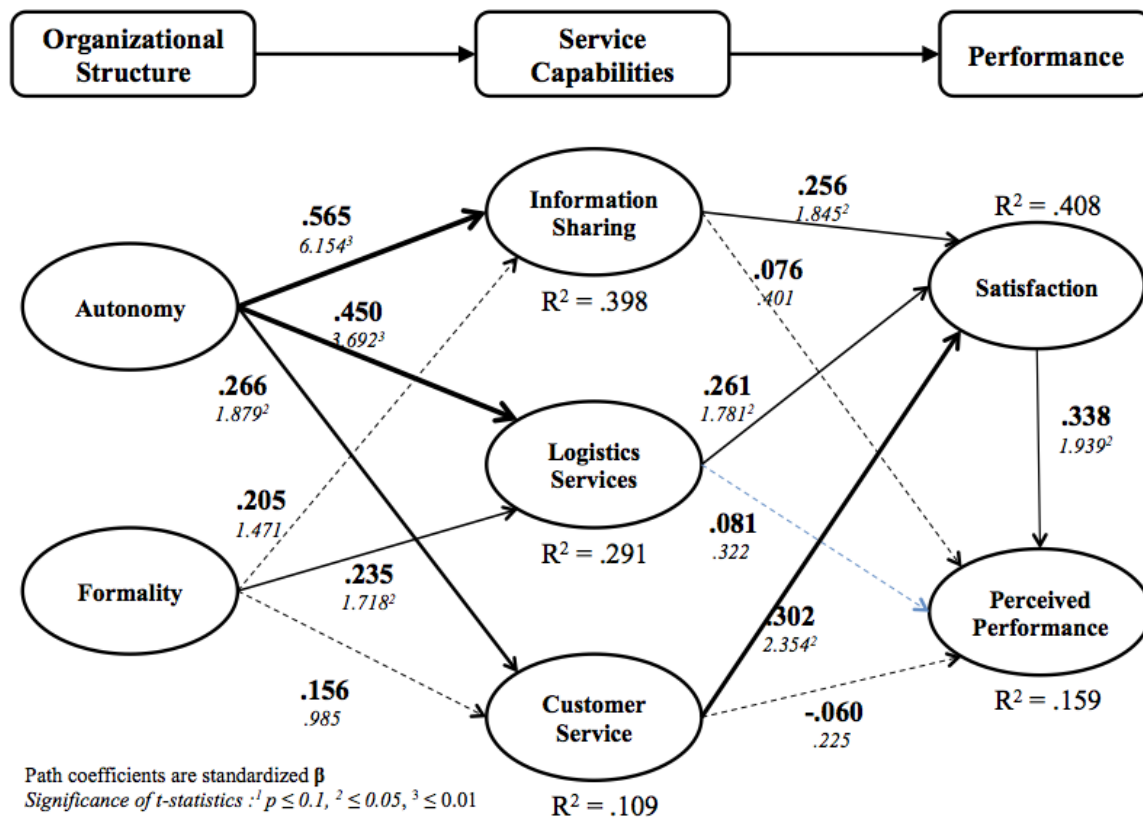
Logistics service providers assist manufacturers and other businesses in one or more of the following areas: warehousing, packaging, inventory management, transportation, and freight forwarding. In addition, they can increase the logistical efficiency by leveraging their services across several clients. Furthermore, successful collaborations between LSPs and their clients result in inventory reduction, improved delivery, shorter lead-times, and higher flexibility (Hofenk et al., 2011). LSPs can be flexible in the amount and duration of goods stored and time of delivery in each of their client's market. In addition, because of their larger customer base, they can increase the visibility and opportunities for obtaining new business for their clients. Yet, there are complaints about each other's business practices.

For instance, Langley and Capegemini, (2014) indicate that there is still a wide spread in the percentage points across the performance and satisfaction issues from both parties viewpoints. In their LSP-client study, 63, 71, and 62 percent of the LSPs expressed satisfaction with their clients along the dimensions of information transparency, talented/right people, and operational excellence versus 36, 41, and 44 percent of their clients, respectively. In addition, the percentage of LSPs that agreed with their reliability, time and effort, and governance capabilities as being above average were as follows: 67, 52, and 39 percent, respectively. In contrast, the percentage of the clients that agreed with these LSP capabilities were 46, 35, and 31 percent, respectively.

Furthermore, LSPs believe that there are unreasonable cost cutting expectations by their clients because these clients question the value of what they are receiving from LSPs. Therefore, these clients are entrenching in

commoditizing logistics services, creating self-perpetuating price wars, and moving towards arms-length exchanges; LSPs, on the contrary, are resisting investing in innovation (Supply Chain Management Review, 2014). Thus, although LSP usage is on the rise, inefficiencies may result in clients scaling back on consuming the number of different logistical services being offered by LSPs or resorting to arms-length transactions. Hence, what may be turned into a long-term, healthy business alliance is held at a short-term, transaction-based and costly stage because of a lack of structure and poor performance; these LSPs are falling prey to the common knowledge that acquiring a new customer is much more expensive than retaining the current ones (Wallenburg, 2011).

Resource Based View (RBV) theorists, however, suggest that LSPs and their clients should not be fearful of poor performance provided they connect with the correct resources and capabilities of these LSPs. For example, Sachdev and Merz (2010) conducted an exploratory study of 87 United States LSPs and their prime clients. They identified and sequenced formalized and autonomous organization structure to affect market-based capabilities (logistics service, customer service, and information sharing), which in turn affected satisfaction and performance. Findings from this study suggest that the overall model was supported; specifically, eight of the thirteen hypothesized paths were statistically significant (Fig 1). Therefore, LSPs should persuade their clients to adhere to the RBV approach. A key research question then becomes: Are these resource-based capabilities transferable to other countries?



**Figure 1: U.S. Model Results (Sachdev and Merz 2010)**

Answers to such questions may need to be understood by logisticians since it is widely known that the logistics problems in most countries, especially emerging markets, are far beyond those faced in the U.S. (Transportation & Logistics, 2010). For example, in India, the wastage and shortage of staple food was traced to improper logistics practices and customer service (The Economist, 2013). A study conducted by Deloitte (2012) affirms that improving the institutional environment in emerging markets, such as Brazil, would improve logistics performance. In the meantime, LSP capabilities may be used to circumvent delays and problems caused by logistics activities.

Institutional environment refers to the political and regulatory system, cognitive beliefs and knowledge, and cultural norms of society (Chelariu et al., 2006). These factors may influence a country's infrastructural and information technology systems development. For instance, institutional environment has played a key role in Japanese distribution system; the importance of social interaction and social welfare (e.g., over employed labor) in Japan overpowers market factors (e.g., pricing and market efficiency) for Japanese to continue to maintain their lengthy and cumbersome distribution system (Grewal and Dharwadkar, 2002).

However, most logistics research pertains to the utilization of different types of logistics firms, cost and performance across the number of logistics activities, and reasons for outsourcing (Rajesh 2011; Liu and Lyons, 2010). Studies such as reported here are virtually non-existent and needed as mentioned in the above discussion. This study is a replication in a different setting, Brazil. The institutional environment differences between the two countries, U.S. and Brazil, are then used to explain the results of this study.

Brazil was selected because it is not only one of United States' larger trading partners but is faced with a different institutional environment (as will be explained later) than the U.S. In addition, its total logistics cost as a percentage of its GDP is almost twice that of the U.S. (DHL, 2014). Moreover, several multinationals have located their regional Latin America headquarters in Brazil (Deloitte, 2012), and, logistically, it is strategically located with respect to the U.S. Furthermore, as in the U.S., Brazilian businesses operate under the presumption that outsourcing logistics is more than a transactional activity, and it contributes positively to performance (Vivaldini and Pires, 2008).

This study contains five parts: First, we present a brief summary of the conceptual framework. Next, we compare the institutional environment differences between Brazil and the U.S. Then, we compare the two studies by suggesting similar hypotheses for the Brazilian model and testing them. Subsequently, the results of our exploratory and descriptive study are presented. Differences between this study and Sachdev and Merz's (2010) study are then explained. Lastly, the theoretical and managerial implications are discussed.

## **Conceptual framework**

The conceptual framework was developed by reviewing the supply chain literature, applying the RBV, and sequencing the constructs in accordance with the organization structure-strategy-performance framework, recognizing that strategy emanates from an organization's resources. As per RBV proponents, organizations conduct business through the bundle of resources that they control. The more a resource is valuable, rare, immobile, and non-substitutable, the greater the chances for an organization to obtain a strategic competitive advantage, which has performance-bearing implications. These resources may be classified into physical, human, and organization capital. Physical capital is an organization's control over items such as technology, plant, location, and raw materials. Examples of human capital are knowledge, training, experience, and skills of the employees. Organization capital encompasses the organization structure and assets for running the organization (Barney, 1991).

RBV proponents use capabilities, resources, and assets interchangeably (Ray et al., 2004). In this research, we accept the following authors' suggestions for defining resources. Day (1994) suggests that it is not the resources in itself but the organization's capabilities in deploying its resources that provide the

synergies to formulate strategies, build relationships, and obtain superior performance. An organization's capabilities enable it to comprehend, integrate, and deploy resources and make use of its assets in the most effective method (Murray et al. 2011; Daugherty et al., 2011). Furthermore, these capabilities have causal ambiguities that are complex and situation-specific, and therefore are not only difficult to replicate but are also time-based that make their transferability difficult to other exchanges (Barney, 1991). Logisticians exhibit these capabilities while filling and delivering orders (Day, 1994).

Organization structure, logistics service capability, and customer-oriented capability form the basis for this study because they are deeply rooted in logistics exchanges and meet the RBV guidelines. In addition, information sharing capability is included because it is the primary way parties keep abreast of the movement and tracking of goods; it also may be used as a competitive weapon in logistics exchanges (Richey et al., 2010). Organization structure is defined as the degree of autonomy and formalization of management styles and is a significant contributor to performance-driven exchanges. Autonomy refers to the extent to which the decision-making authority is left to the employees involved in the exchange rather than being concentrated at the higher levels of an organization. Formalization refers to the extent to which rules and procedures are written as a point of reference for the employees (Menon et al., 1999).

## **Brazilian and U.S Institutional Environment**

Table 1 and 2 summarize the fundamental institutional environment differences in conducting business in the U.S. versus Brazil (Bello and Zhou, 2006; Geert-Hofstede, 2014; Paneth, n.d.; U.S. Commerce Guide, 2013; Wise, 2009). From these tables one may conclude that regulations are less cumbersome and supply chain information is more readily available in the U.S. than Brazil. However, in Brazil, one implements business practices through learning by doing; laws are cumbersome because they consist of lengthy procedures, and auditing and documentation practices are more lax in Brazil than the U.S. Thus, personal relationships and organizational capabilities override contractual issues in many cases in Brazil.

Whereas Brazilians concentrate on trust and long-term focus as the pillars of success to business exchanges, the U.S businesses treat trust as secondary and commitment as the core to any business exchange (O'Keefe and O'Keefe, 2004). Moreover, U.S business partners are more calculative and risk averse than the Brazilians. Unlike Brazil, where personal relationship is the path to build professional relationship, personal conversations during business practices in the U.S are treated as a mere formality. Thus, flexibility and changes to customer service are expected from the contact person at each touch point in Brazil, whereas management decisions are closely tied with contractual issues in the U.S. In addition, Brazilians more readily forgive their LSPs' service failure

since personal relationship and trust take precedence and exchange partners are more loyal to each other (Chui and Kwok, 2008). Furthermore, Brazilians more readily mix within their ethnic group and subcultures, are open-minded in respecting opinions of one another, and are flexible in correcting courses of action in business practices (Deloitte, 2012). Therefore, the fear of losing a customer is higher in the U.S than Brazil given that businesses are built more along the lines of calculative commitment rather than trust, and customer satisfaction becomes more important to U.S. businesses.

**Table 1: Institutional Environment Differences between United States and Brazil**

	U. S.A.	Brazil
Regulatory – Comply with the country’s legislative requirements of governance through rules and policies for conducting business and inducements in the form of subsidies and taxes	As a general rule, the regulation body applies law in a similar way for both domestic and foreign businesses including tax incentives and auditing practices; however, one has to abide by the complex tax systems of the federal, state, and local governments; businesses are closely monitored by several governing bodies. There are several legal entities through which one may practice business; however, the contractual, liabilities, tort laws are unique to each case. Product liability and legal literature must be closely read rather than reading the summarized version provided by media or related trade magazines. Hiring local attorneys or outsourcing this function for implementing major business decisions is extremely important. Storage, recycling, and disposing logistics functions are closely regulated, generating volumes of	Brazilians pay close attention to the explicit and implicit cost of conducting business in Brazil (“Custo Brasil”). Such costs are often misunderstood, especially in the logistics and distribution industry, since they are unwritten and handed down to the employees. In addition, given the fragmented nature of this industry, it is overburdened with several special taxes such as merchandise circulation tax, industrial products tax, etc.; some of these pre-payments can be claimed upon delivery of the goods. The legal and informal economy system is unnecessarily overstrained with bureaucracies and basic documents that need to be filed. Such tasks, which require personal relationships and networking to complete, are left at the hands of employees who have poor public education.



	regulatory information for movement of goods.	
Normative – Social codes of conduct in one’s profession and mimicking behaviors on how to manage a business	Along the opportunistic to trustworthy continuum, businesses generally fall in the opportunistic-seeking side.	Businesses must set aside time for relationship development with the respective authorities, trade associations, and business partners to build trust, commitment, and mutual benefits and learn to protect intellectual property rights and counterfeiting.
Cognitive Culture – Habits and programmed ways of behaving and perceiving events in society	Negotiations are conducted in the presence of an attorney, and start with non-binding agreement terms prepared by either side with the goal of working towards a signature, binding document to modify any agreement for unforeseen problems. Antitrust and tax laws are taken into consideration before concluding any negotiation	Negotiations are slow and heavily influenced by personal contact. Although other communication methods adds value to the face-to-face contacts, they are never the preferred option for closing any decision or making changes to prior negotiations. There needs to be a consistent working relationship before, during, and after the sales.

**Table 2: Cultural Differences between United States and Brazil**

	U. S	Brazil
Power Distance	“Liberty and justice for all” prevails; focuses on equal rights; hierarchy is established for convenience.	Respect the hierarchy; one boss; status symbols of power are very important.
Long-term	Performance is measured on a short-term basis; profit and loss statements are issued on a quarterly basis, which drive individuals to strive for quick results.	Is a long-term, relationship-oriented society
Individualism	Perceive business as less personal; prescribe to self-concept; loyalty to self and career over company loyalty; are not shy about approaching their prospects to obtain information.	Integrated into strong, cohesive groups that protect its members in exchange for loyalty.
Uncertainty Avoidance	Fearless to change; take risks.	There are rules and an elaborate legal system to structure life; however, people are very passionate and demonstrative.

## Hypotheses

The following hypotheses are based on the literature review and cross-cultural viewpoints of the authors. Proper organization structure improves the ability to increase serviceability. For example, autonomy improves closeness and reduces estrangement between the exchange parties. In addition, it raises the awareness of the resources and organizational capabilities present in an exchange. Formalization improves the LSP employees' ability to provide similar information so as not to confuse the customer. In addition, it ensures that employees cover their organization's historical ways of resolving problems and capturing opportunities.

Sharing of information places parties on the same page in real-time basis and improves satisfaction and performance. It reduces deceptive practices in the supply chain since hidden costs may be detected by either party. Effective logistics service increases flexibility in resolving customers' needs, reduces transaction and production costs, and moves organizations closer to that perfect order. By espousing customer-oriented capability, LSPs curtail short-term selling tactics, focus on value-creating opportunities, become solution-oriented, which enhance satisfaction and performance. Satisfaction is a first step in increasing harmony in any relationship and a strategic approach in improving performance (Menon et al., 1999; Olson et al., 2005; Sachdev and Merz, 2010; Wang et al., 2007). The hypotheses noted below are similar to the ones tested in Sachdev and Merz's (2010) study.

### Organization Structure

H1a: As the organizational structure becomes more autonomous, information sharing increases.

H1b: As the organizational structure becomes more autonomous, logistics service improves.

H1c: As the organizational structure becomes more autonomous, customer service improves.

H2a: As the organizational structure becomes more formalized, information sharing increases.

H2b: As the organizational structure becomes more formalized, logistics service improves.

H2c: As the organizational structure becomes more formalized, customer service improves.

### *Information Sharing*

H3a: As information sharing increases, seller's relationship satisfaction increases.

H3b: As information sharing increases, seller's perceived performance increases.

### *Logistics Service Capability*

H4a: As Logistics Capability improves, seller's relationship satisfaction increases.

H4b: As Logistics Capability improves, seller's perceived performance increases.

### *Customer Service Capability*

H5a: As customer orientation improves, seller's relationship satisfaction increases.

H5b: As customer orientation improves, seller's perceived performance increases.

### *Satisfaction – Performance*

H6: As seller's relationship satisfaction increases, its perceived financial performance increases.

## **Method**

We focus on the dyadic relations between a LSP and its major client. An LSP is defined as an independent organization that provides some or all of a manufacturer's logistics functions (Coyle et al., 2003). The clients comprise manufacturers, distributors, and retailers.

### **U.S. sample**

After removing all duplicate entries from a national supply chain association directory, LSP participants were selected via a systematic sampling procedure (every 5th person). By means of telephone and snowball approach, logistics managers or owners of LSP companies were contacted and a commitment made from 150 of the 300 people called. These participants were asked to identify their primary client in the B2B area (manufactures, distributors, or retailers) while filling out the survey. Furthermore, if they chose to provide their names and addresses, they would be entered into a drawing for a one year of free membership for the supply chain association. Four weeks after the initial mailing, the respondents were sent a reminder via a follow up letter. Of the 150 mailed surveys, 95 were returned and 87 were completely filled, resulting in a 58% response rate.

## **Brazilian sample**

The questionnaire was translated into Portuguese. Next, the questionnaire was back translated to English. Subsequently, the questionnaire was refined to get past the conceptual, definitional, and market structure equivalencies and re-translated into Portuguese. Then, using websites of business associations in the states of Paraná, Santa Catarina and Rio Grande do Sul in southern Brazil, 80 Logistics Service Providers were contacted by telephone. Through a snowballing approach the person (logistics manager) responsible for providing logistics solutions was identified. Responses were directly recorded in the electronic questionnaire by the interviewer. When the respondent did not have time to answer the questions by telephone, the link to access the questionnaire was sent by e-mail. Eighty percent of the approached companies filled out the questionnaire. The final response rate of 77.5% consisted of 62 valid cases.

## **Operational Definitions**

LSPs may participate in a variety of logistics services. Since excellence in performing the service overrides the number of logistics activities provided by an LSP (Liu and Lyons, 2010), we measure capabilities using global scales. Items from Khong (2005) were used to measure customer service. Scales from Zhao et al. (2001) were used to measure information sharing, and organization structure was measured using the items from Schminke et al. (2000). Questionnaire items for logistics service and performance were borrowed from Lynch et al. (2000), and the satisfaction items were borrowed from Redondo and Fierro (2005).

## **Data Analysis**

Similar to the U.S. sample the hypotheses for the Brazilian sample was tested using the SmartPLS algorithm (Ringle, et al., 2005). SmartPLS or PLS path modeling is also a useful structural equation modeling tool when samples are small, and the objective of the study is theory building. In addition, it does not depend on the assumptions about the underlying data distributions, so it operates quite well with skewed and non-normal data (Gefen et al., 2000).

Assessing the measurement model in PLS path models focuses on item loadings, reliability coefficients (composite reliability), and convergent and discriminant validity. The key tests of the measurement model adequacy are based on the following:

- Measures should load onto their underlying latent variables with values greater than 0.7 (Fornell and Larcker, 1981).
- A composite reliability of 0.7 or greater indicates an acceptable level of reliability (Fornell and Larcker, 1981). For exploratory work, a Cronbach's alpha coefficient of 0.6 or better is recommended (Nunnally, 1978).

- The variance captured by the indicators relative to the measurement error (average variance extracted or AVE) should exceed 0.5 to justify using a construct (Barclay et al., 1995).
- For adequate discriminant validity (the degree to which the items differentiate among constructs), items should load more strongly on their own constructs, and the average variance shared between each construct and its measures should be greater than the variance shared between the constructs (Fornell and Larcker, 1981).

The structural model in LV-PLS is assessed by examining the path coefficients (standardized betas) and associated t-statistics computed from the standard error estimates generated by a bootstrapping routine. In addition, the path coefficients of determination (R<sup>2</sup>) are used as indicators of the overall predictive strength and fit of the model. After the model for the Brazilian sample was estimated, an empirical comparison of the two models was conducted by testing for the equivalence of the index values and the parameter estimates across the two models.

## Findings

### Measurement Model

The results of the analyses are shown in Tables 3, 4, and 5. Table 3 displays the reliability, convergent, and discriminant validity indicators for the constructs in the model, while Table 4 displays the loadings and cross loading of the modeled components. All of the constructs possess acceptable levels of composite reliability ( $> 0.7$ ); however, the Cronbach's alpha coefficient for the customer services is below the recommended benchmark ( $0.561 < 0.6$ ). Since the objective was to replicate and compare, it was decided to retain all the item customer service items. Furthermore, the customer service construct still exceeds the minimum for composite reliability.

**Table 3: Indicators of Structural Equations Modeling Quality**

Constructs	Autonomy	Formality	InfoShare	LogServ	CusServ	Satis	Perform
Autonomy	<b>0.846</b>	0	0	0	0	0	0
Formality	0.414	<b>0.917</b>	0	0	0	0	0
InfoShare	0.389	0.052	<b>0.797</b>	0	0	0	0
LogServ	0.648	0.596	0.328	<b>0.736</b>	0	0	0
CusServ	0.450	0.488	0.256	0.349	<b>0.710</b>	0	0
Satis	0.160	0.246	0.202	0.185	0.181	<b>0.943</b>	0
Perform	0.513	0.456	0.097	0.571	0.295	0.224	<b>0.905</b>
Composite Reliability	0.883	0.955	0.837	0.874	0.742	0.919	0.875
Cronbachs Alpha	0.802	0.937	0.713	0.823	0.561	0.889	0.820
Ave. Var. Extracted (AVE)	<b>0.716</b>	<b>0.841</b>	<b>0.636</b>	<b>0.542</b>	<b>0.504</b>	<b>0.739</b>	<b>0.586</b>
R-Square	0	0	<b>0.165</b>	<b>0.549</b>	<b>0.313</b>	<b>0.067</b>	<b>0.365</b>
Redundancy	0	0	0.090	0.211	0.084	0.025	-0.028
<i>Diagonal elements are the square roots of the average variance extracted.</i>							
<i>Off diagonal elements are the correlations among the constructs.</i>							
<i>Diagonal elements should be larger than off-diagonal elements in order to obtain the discriminant validity.</i>							

An examination of the AVE values in Table 3 reveal that all of the constructs exceed the acceptable level (0.5). Discriminant validity in the model is met since the square roots of the AVEs for each construct (shown on the diagonal of the correlation matrix in Table 3) exceed the off diagonal inter-correlations between the latent variables in the model.

**Table 4: Measurement Model Variable Loadings and Cross Loadings**

VarName	Autonomy	Formality	InfoShare	LogOps	CusServ	Satis	Perform
Auto1	<b>0.777</b>	0.274	0.335	0.477	0.300	0.252	0.332
Auto2	<b>0.873</b>	0.387	0.385	0.632	0.435	0.110	0.475
Auto3	<b>0.884</b>	0.380	0.256	0.514	0.394	0.059	0.482
Formal1	0.437	<b>0.961</b>	0.108	0.552	0.546	0.233	0.475
Formal2	0.444	<b>0.954</b>	0.094	0.560	0.435	0.264	0.448
Formal3	0.258	<b>0.861</b>	-0.067	0.444	0.402	0.053	0.287
Formal4	0.359	<b>0.889</b>	0.032	0.616	0.396	0.322	0.440
Infor1	0.222	0.003	<b>0.795</b>	0.210	0.065	0.209	-0.061
Infor2	0.293	0.128	<b>0.646</b>	0.171	0.281	0.017	0.023
Info3	0.389	0.022	<b>0.927</b>	0.355	0.259	0.217	0.190
LogOp1	0.520	0.505	0.323	<b>0.816</b>	0.349	0.284	0.415
LogOp2	0.438	0.372	0.452	<b>0.487</b>	0.306	0.078	0.273
LogOp3	0.427	0.475	0.154	<b>0.745</b>	0.303	-0.002	0.427
LogOp4	0.532	0.371	0.237	<b>0.807</b>	0.196	0.179	0.433
LogOp5	0.505	0.417	0.239	<b>0.796</b>	0.149	0.121	0.502
LogOp6	0.428	0.483	0.081	<b>0.713</b>	0.252	0.127	0.442
CusServ1	0.335	0.459	0.163	0.199	<b>0.842</b>	0.252	0.275
CusServ2	0.435	0.311	0.249	0.407	<b>0.769</b>	0.003	0.274
CusServ3	0.063	0.249	0.166	0.062	<b>0.460</b>	0.148	-0.197
Sat1	0.018	0.094	0.132	0.015	0.024	<b>0.785</b>	0.070
Sat2	0.225	0.283	0.199	0.176	0.272	<b>0.899</b>	0.241
Sat3	0.119	0.231	0.202	0.239	0.075	<b>0.899</b>	0.230
Sat4	0.090	0.137	0.124	0.099	0.157	<b>0.852</b>	0.133
Perf1	0.407	0.294	0.082	0.428	0.182	0.220	<b>0.843</b>
Perf2	0.555	0.282	0.128	0.477	0.290	0.103	<b>0.793</b>
Perf3	0.354	0.267	0.053	0.425	0.114	0.127	<b>0.782</b>
Perf4	0.301	0.532	0.030	0.448	0.228	0.182	<b>0.633</b>
Perf5	0.323	0.347	0.075	0.387	0.300	0.224	<b>0.762</b>

The loadings shown in Table 4 are generally acceptable. Twenty-four of the 28 latent variable indicators load at 0.7 or greater on their respective constructs. Overall, if the cross loadings are smaller and the discriminate validity test are met, the construct validity of the measurement model is acceptable for exploratory analysis (Fornell and Larcker, 1981).

### **Structural Model**

Figure 2 depicts the path coefficients of the Brazilian model. The path coefficients are shown together with their respective significance levels in Table 5. The standard errors generated from a bootstrapping routine built into the SmartPLS software estimated the t-statistics. The standard errors of the estimates were generated from five thousand re-samples as recommended by Hair, Jr. et al. (2010).



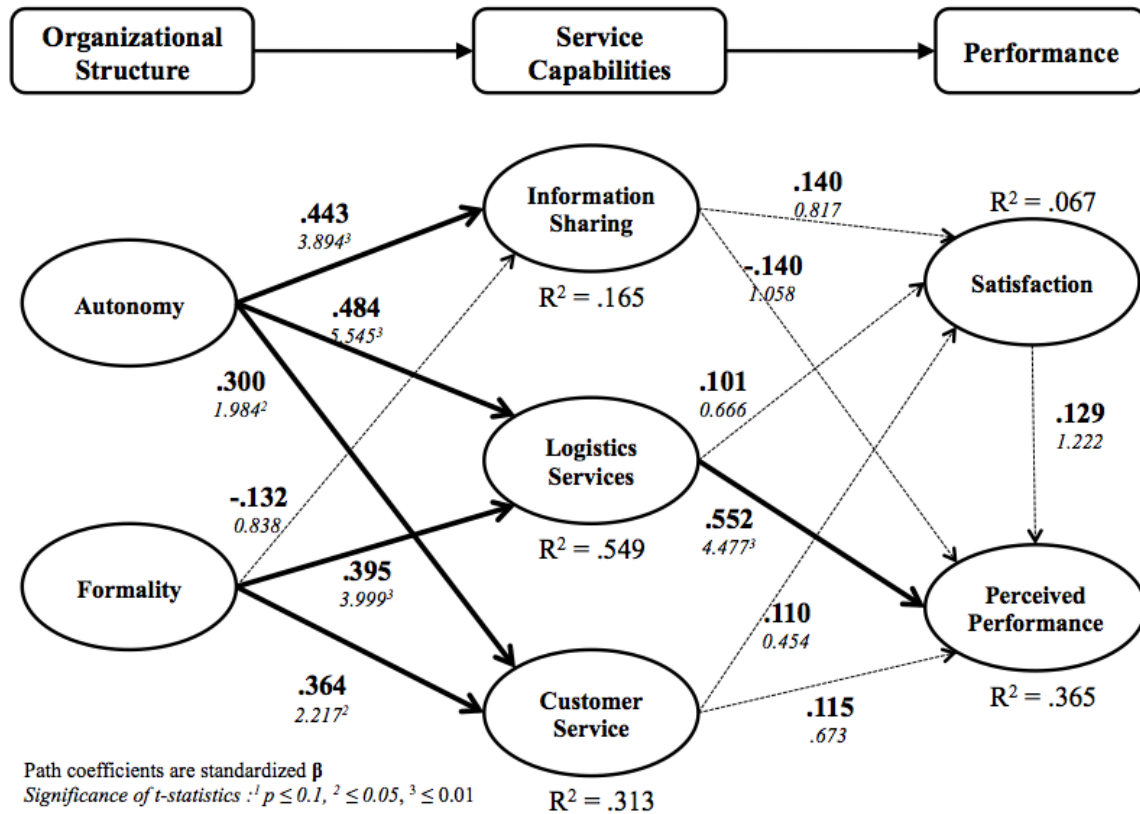


Figure 2: Brazil Model Results

Table 5: Path Coefficients and Significance Levels

Hypothesized Path	H	Std Coef	Bootstrap Results				
			Mean	StDev	Std Error	t-Stat	p
Autonomy -> InfoShare	H1a	<b>0.443</b>	0.470	0.114	0.114	3.894	0.000
Autonomy -> LogServ	H1b	<b>0.484</b>	0.482	0.087	0.087	5.545	0.000
Autonomy -> CusServ	H1c	<b>0.300</b>	0.316	0.151	0.151	1.984	0.026
Formality -> InfoShare	H2a	-0.132	-0.152	0.157	0.157	0.838	0.203
Formality -> LogServ	H2b	<b>0.395</b>	0.403	0.099	0.099	3.999	0.000
Formality -> CusServ	H2c	<b>0.364</b>	0.356	0.164	0.164	2.217	0.015
InfoShare -> Satis	H3a	0.141	0.138	0.172	0.172	0.817	0.209
InfoShare -> Perform	H3b	-0.140	-0.132	0.132	0.132	1.058	0.147
LogServ-> Satis	H4a	0.101	0.104	0.151	0.151	0.666	0.254
LogServ-> Perform	H4b	<b>0.553</b>	0.531	0.123	0.123	4.477	0.000
CusServ -> Satis	H5a	0.110	0.090	0.242	0.242	0.455	0.326
CusServ -> Perform	H5b	0.115	0.143	0.171	0.171	0.673	0.252
Satis -> Perform	H6	0.129	0.126	0.106	0.106	1.222	0.113

As shown in Table 5, six of the thirteen hypothesized paths are significant, indicating a moderate degree of support for the underlying theoretical model. Of the organizational structure components, autonomy significantly predicts all service capability constructs (information sharing, logistics service, and customer service), while formality predicts two - logistics services and customer service. Together, they explain 16.5% of the variance in information sharing, 54.9% of the variance in logistics services, and 31.3% of the variance in customer service. Only one of the service capabilities, logistics services, showed a significant predictive relationship with performance. It strongly predicts perceived performance, explaining 36.5% of the variance. Unlike the U.S sample, none of the service capabilities affected satisfaction significantly.

Differences between the indicators in the U.S. and the Brazilian models are displayed in Tables 6 and 7, which show the means and standard deviations of the indicators, the index values, and parameter estimates. As shown in Table 6, only two of the thirteen path coefficients were significantly different across the two samples. The formality to information sharing path (H2a) was larger in the U.S. sample, while the logistics services to perceived performance path (H4b) was larger in the Brazilian sample.

**Table 6: Path Coefficient Differences between U.S. and Brazilian Samples**

Paths	H	Diff <sub>US-Brazil</sub>	S <sub>pooled</sub>	t <sub>-pooled</sub>	p
Autonomy -> InfoShare	H1a	0.122	0.865	0.849	0.199
Autonomy -> LogServ	H1b	-0.034	0.963	-0.214	0.416
Autonomy -> CusServ	H1c	-0.033	1.255	-0.159	0.437
<b>Formality -&gt; InfoShare</b>	<b>H2a</b>	<b>0.337</b>	<b>1.261</b>	<b>1.602</b>	<b>0.056</b>
Formality -> LogServ	H2b	-0.160	1.085	-0.884	0.189
Formality -> CusServ	H2c	-0.208	1.390	-0.897	0.186
InfoShare -> Satis	H3a	0.115	1.306	0.529	0.299
InfoShare -> Perform	H3b	0.215	1.488	0.869	0.193
LogServ-> Satis	H4a	0.160	1.281	0.748	0.228
<b>LogServ-&gt; Perform</b>	<b>H4b</b>	<b>-0.471</b>	<b>1.882</b>	<b>-1.503</b>	<b>0.067</b>
CusServ -> Satis	H5a	0.192	1.517	0.760	0.224
CusServ -> Perform	H5b	-0.175	2.060	-0.509	0.306
Satis -> Perform	H6	0.209	1.336	0.937	0.175

In Table 7, 16 of the 28 model indicators show significantly different mean values (t-tests, two tailed). Brazilians rated 12 of the 16 items significantly higher than U.S. respondents with logistics services, customer services, and satisfaction being the most apparent. U.S. respondents rated perceived performance uniformly higher than their Brazilian counterparts. Not surprisingly, the differences in the index scores showed a similar pattern with the indices for autonomy, logistics services, and satisfaction in the Brazilian

sample exceeding the values of those in the U.S. sample. Only the index value for perceived performance in the U.S. sample significantly exceeded the value than that of the Brazilian sample.

**Table 7: Item and Index Differences between Brazilian and U.S. Samples**

Variable	Bz (n=62)		US (n=86)		Diff <sub>Brazil-US</sub>	S <sub>pooled</sub>	t	p
	Mean	SD	Mean	SD				
Auto1	4.69	1.49	4.94	1.75	-0.25	2.71	-0.905	0.367
<b>Auto2</b>	<b>4.87</b>	<b>1.57</b>	<b>6.01</b>	<b>1.22</b>	<b>-1.14</b>	<b>1.90</b>	<b>-4.962</b>	<b>0.000</b>
Auto3	5.29	1.57	5.08	1.51	0.21	2.36	0.816	0.416
<b>Formal1</b>	<b>4.94</b>	<b>1.93</b>	<b>4.41</b>	<b>1.74</b>	<b>0.53</b>	<b>3.33</b>	<b>1.738</b>	<b>0.084</b>
Formal2	5.11	2.11	4.84	1.52	0.28	3.21	0.924	0.357
<b>Formal3</b>	<b>5.02</b>	<b>1.93</b>	<b>5.71</b>	<b>1.28</b>	<b>-0.69</b>	<b>2.51</b>	<b>-2.625</b>	<b>0.010</b>
Formal4	4.53	2.19	4.90	1.32	-0.36	3.01	-1.256	0.211
Infor1	4.81	1.57	5.06	1.43	-0.25	2.21	-1.017	0.311
<b>Infor2</b>	<b>5.31</b>	<b>1.57</b>	<b>4.64</b>	<b>1.55</b>	<b>0.67</b>	<b>2.43</b>	<b>2.567</b>	<b>0.011</b>
<b>Infor3</b>	<b>4.94</b>	<b>1.74</b>	<b>3.87</b>	<b>1.44</b>	<b>1.06</b>	<b>2.46</b>	<b>4.068</b>	<b>0.000</b>
LogOp1	5.47	1.36	5.26	1.35	0.21	1.83	0.939	0.349
LogOp2	4.31	2.39	4.56	1.37	-0.25	3.47	-0.811	0.419
<b>LogOp3</b>	<b>5.61</b>	<b>1.46</b>	<b>4.55</b>	<b>1.59</b>	<b>1.07</b>	<b>2.37</b>	<b>4.158</b>	<b>0.000</b>
<b>LogOp4</b>	<b>6.00</b>	<b>1.01</b>	<b>4.69</b>	<b>1.76</b>	<b>1.31</b>	<b>2.22</b>	<b>5.290</b>	<b>0.000</b>
LogOp5	5.77	1.17	5.38	1.61	0.39	2.08	1.626	0.106
LogOp6	5.55	1.25	5.50	1.71	0.05	2.35	0.190	0.850
<b>CusServ1</b>	<b>5.08</b>	<b>1.88</b>	<b>4.51</b>	<b>1.66</b>	<b>0.57</b>	<b>3.08</b>	<b>1.945</b>	<b>0.054</b>
<b>CusServ2</b>	<b>6.18</b>	<b>1.27</b>	<b>4.62</b>	<b>1.75</b>	<b>1.56</b>	<b>2.46</b>	<b>5.972</b>	<b>0.000</b>
<b>CusServ3</b>	<b>6.44</b>	<b>1.00</b>	<b>4.90</b>	<b>1.67</b>	<b>1.54</b>	<b>2.04</b>	<b>6.478</b>	<b>0.000</b>
<b>Sat1</b>	<b>6.27</b>	<b>0.81</b>	<b>5.53</b>	<b>0.95</b>	<b>0.74</b>	<b>0.81</b>	<b>4.942</b>	<b>0.000</b>
<b>Sat2</b>	<b>6.03</b>	<b>0.90</b>	<b>5.23</b>	<b>1.09</b>	<b>0.80</b>	<b>1.04</b>	<b>4.715</b>	<b>0.000</b>
<b>Sat3</b>	<b>6.06</b>	<b>1.14</b>	<b>5.35</b>	<b>1.01</b>	<b>0.72</b>	<b>1.15</b>	<b>4.013</b>	<b>0.000</b>
<b>Sat4</b>	<b>6.34</b>	<b>0.96</b>	<b>5.66</b>	<b>0.97</b>	<b>0.68</b>	<b>0.93</b>	<b>4.217</b>	<b>0.000</b>
Perf1	3.47	0.69	3.62	0.87	-0.15	0.64	-1.112	0.268
Perf2	3.40	0.69	3.57	0.86	-0.17	0.63	-1.259	0.210
Perf3	3.48	0.65	3.62	0.87	-0.13	0.62	-1.013	0.313
<b>Perf4</b>	<b>3.52</b>	<b>0.80</b>	<b>3.87</b>	<b>0.89</b>	<b>-0.36</b>	<b>0.73</b>	<b>-2.495</b>	<b>0.014</b>
<b>Perf5</b>	<b>3.45</b>	<b>0.76</b>	<b>3.72</b>	<b>0.86</b>	<b>-0.27</b>	<b>0.68</b>	<b>-1.966</b>	<b>0.051</b>

Indices								
<b>Autonomy</b>	<b>4.96</b>	<b>1.31</b>	<b>4.60</b>	<b>1.14</b>	<b>0.35</b>	<b>1.48</b>	<b>1.746</b>	<b>0.083</b>
Formality	4.91	1.87	5.03	1.33	-0.12	2.49	-0.468	0.640
InfoShare	5.00	1.32	4.67	1.47	0.32	1.98	1.377	0.171
<b>LogServ</b>	<b>5.62</b>	<b>0.97</b>	<b>5.04</b>	<b>1.13</b>	<b>0.58</b>	<b>1.14</b>	<b>3.276</b>	<b>0.001</b>
CusServ	5.93	1.02	5.68	1.12	0.26	1.16	1.421	0.158
<b>Satis</b>	<b>6.18</b>	<b>0.82</b>	<b>5.46</b>	<b>0.91</b>	<b>0.72</b>	<b>0.76</b>	<b>4.967</b>	<b>0.000</b>
<b>Perform</b>	<b>3.46</b>	<b>0.55</b>	<b>3.68</b>	<b>0.75</b>	<b>-0.22</b>	<b>0.46</b>	<b>-1.930</b>	<b>0.056</b>

## Discussion

Building on the U.S. study of Sachdev and Merz (2010), we attempted to extend the RBV to LSPs in Brazil using the structure-strategy-performance framework to evaluate their service capabilities. Although the hypotheses for both our U.S. and Brazilian models are similar, any statistical differences between the corresponding path coefficients may be attributed to the institutional environmental differences. We hypothesized that an LSP's organization structure would influence its service capabilities, which in turn would influence satisfaction and performance.

Similar to the U.S. study, we found autonomy to play a significant role in enhancing Brazilian LSPs' capabilities in the areas of information sharing, logistics service, and customer service. Olson et al., (2005) also found autonomy to empower employees to improve organizational capabilities in their U.S. study. Because LSPs need to be flexible with their offerings to the different types of industry, an autonomous structure provides them with the decision-making ability to work with multidisciplinary teams and context-based situations (Claver-Cortés et al., 2007). Autonomous decision-making organizations are considered to be more adaptive and innovative in knowledge generation and management (Kasper et al., 2008).

Formalization improved logistics service and customer service, but did not have a significant impact on information sharing. In the U.S. based study, formalization was also the weaker of the two organization structure constructs; it did not have a bearing on information sharing and customer service. Some researchers conclude that although formalization may be beneficial in providing tactical information, it lags in its approach to motivate authorities to reveal strategic and innovative ways of information sharing (e.g. social media). It thus may only improve reactive rather than proactive actions. For example, in their Hong Kong based study, Panayides and So (2005) found organization learning to be conducive in enabling LSPs practice innovative techniques that have performance bearing qualities. Formalization structure may not be imparting the necessary organization learning for being creative and innovative.

Unlike the U.S. model, none of the three service capabilities affected satisfaction in the Brazilian model; moreover, satisfaction did not contribute to performance. Institutional environment may be playing a bigger role than expected in the Brazilian situation. For example, Sledge et al. (2008) found organizations' contribution to providing gainful employment in the form of quality of life for their employees and their families and the employees' genuine respect, indebtedness, and loyalty toward their organizations as drivers of employee satisfaction in Brazil. Moreover, people from individualistic cultures, such as the U.S., are more variety-seeking, price conscious, shop around more for the best quality, and tend to be less brand loyal than Brazilians (Leng and Botelho, 2010).

Of the three capabilities, only logistics service had a bearing on performance; in our U.S based study, the three service capabilities improved performance indirectly through satisfaction. Being a collectivist culture, Brazilians work more along the lines of organization pride to ensure that the mission of an organization is not hampered in anyway; a LSP's core business is its logistics service (Beekun et al., 2003).

Results from the U.S model suggest that, in order of importance, improving or implementing the three capabilities varied by the organization structure in focus. For instance, organizational autonomy's maximum influence was felt in improving information sharing capability, whereas formalization's impact was felt mostly in improving logistics service. Customer service had the maximum impact in improving satisfaction. However, in the Brazilian case, logistics service was the outstanding capability throughout the path analysis.

These results are consistent with Daugherty et al.'s (2011) suggestion that by leveraging services, LSPs can develop barriers to competition and make their markets more efficient. In both our U.S. and Brazilian models, autonomy was the superior organization construct in enhancing a LSP's capabilities. As mentioned by several researchers, formalization may limit an organization from being proactive, agile, and innovative (Olson et al., 2005; Daugherty et al., 2011). In addition, in their empirical study, Chelariu et al. (2006) conclude that businesses in countries such as Eastern Europe, that face dynamic shifts in their institutional environment, find it difficult to implement their capabilities. These businesses use recommendations and legalistic pleas with their clients to improve performance. Since Brazil's institutional environment is more in the state of flux than the U.S. (Deloitte, 2012), Brazilian LSPs may contemplate using such influencing approaches in addition to information sharing or formalization methods.

## **Managerial Implications**

Since an organization's strategies emanate from its capabilities, the objective of this study was to understand how LSPs should sequence their resources/capabilities along the lines of the structure, strategy, and performance framework. Using structural equation modeling, we analyzed organizations' structure as predictors of service capabilities and these service capabilities as predictors of satisfaction and performance. Our findings indicate that LSPs need to focus on their organizations' service capabilities by utilizing autonomy and formalization structure corresponding with the logistics task on hand. The logistics managers of LSPs should be given the autonomy to make their services proactive, creative, and innovative in the areas of information sharing, implementing logistics tasks, and customer-orientation. Although Brazilians are less rule-based, postpone decision-making, and give time for problems to self-correct before using the visible hand, they may need to be more proactive in their

approaches to provide logistics solutions, especially when operating cross culturally.

Since logistic service has a direct bearing on performance and not satisfaction in Brazil, LSPs should first identify the strategic and tactical logistics and customer service needs for their different clients. Second, the firm should pinpoint the specific capabilities that add value to each of these clients. For instance, since the cost of logistics is higher in Brazil than the U.S., the LSPs may use formalization as a method of reorganizing their logistics tasks in accordance with the problem on hand. Third, since personal relationships and information sharing are ingrained in the Brazilian institutional environment, the LSP's should focus on logistics service followed by customer service.

## **Limitations**

In this study, we tested a U.S. validated logistics survey on the Brazilian market. Because the institutional environment in Brazil is more in the state of flux than the U.S., the Brazilian LSP industry may not be as proactive as expected in our model. In this study we did not measure institutional environment. Moreover, since the Brazilian society is more long-term, relationship oriented than the U.S., relational norms may need to be incorporated in future studies. In addition, there may be a mismatch between the LSPs and their clients' organizational structure, which was not captured in this study. Furthermore, our sample size, although comparable to what is seen in similar types of research, is not large.

In conclusion, the RBV theory is a robust framework for studying various business exchanges. In this study we focused on logistics-based exchanges from the LSPs' perspective of their manufacturing, distributor, or retailer clients. Of the thirteen hypotheses, six paths were significant and in the direction hypothesized. Brazil is an emerging market, and its infrastructure needs significant improvement as indicated by its high logistics cost as a percentage of its GDP in comparison to the U.S. Significant benchmarking procedures may be needed for Brazilian LSPs while paying close attention to their core capabilities. Given the institutional environment differences, the U.S and Brazilian trading partners may need to pay close attention to these managerial implications while pursuing effective and efficient logistics practices.

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