

Scale, Scope and Specialization Effects on Retailers' Procurement Strategies:

Evidence from the Fresh Produce Market of Sao Paulo Brazil

by

Denise Y. Mainville
Department of Agricultural & Applied Economics
Virginia Polytechnic Institute & State University

and

Thomas Reardon
Department of Agricultural Economics
Michigan State University

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Abstract

The emergence of large chains of supermarkets and hypermarkets in food retail markets worldwide has caused major changes to the structure and performance of agrifood marketing chains. Although the rise of large retailers is associated with the marginalization of smaller retailers in both developing and more developed economies, a notable exception exists in Brazil, where small retailers have held their place in the market and recently even gained ground. To date, the literature investigating how retail concentration has affected agrifood chains has tended to focus on the activities of the largest actors. Consequently, the literature has implicitly held the scale, scope and specialization of retailers' input needs constant, overlooking their influence on retailers' procurement strategies, and their potential implications for competitiveness. This paper researches scale, scope and specialization effects on the procurement strategies of diverse retailers in Sao Paulo Brazil's fresh produce markets. The paper treats the choice of procurement strategy as a cost minimization problem for retailers, and proposes hypotheses and tests about the effects of scale, scope and specialization on the choice of procurement strategy in general, as well as specific aspects of the strategy, namely organization, source and institutional arrangements.

Keywords: scale, scope, specialization, procurement strategy, fresh produce, retail

1 Introduction

The emergence of large chains of supermarkets and hypermarkets in food retail markets worldwide and their strategies as market leaders have wrought major changes in the structure and performance of agrifood marketing chains. Although the rise of large modern supermarket and hypermarket chains is associated with the marginalization of many small and more traditional retailers in both developed and developing economy markets (for example see Arnole & Luthra 2000; Reardon & Berdegue 2002), a notable exception exists in Brazil, where small chains and independent retailers of diverse formats have managed to not only persist in the market, but recently have even gained ground relative to the large chains (IBGE *apud* Farina et al 2004). These small independent retailers compete head-to-head with the large supermarket and hypermarket chains or position themselves in niches, yet little is known about the specific strategies that they use, in particular how their procurement systems differ from those of the large chains, or what the implications of these differences are for costs or competitiveness.

To date, the literature on these phenomena has focused on how the rise of large chains and their competitive strategies have affected market structure and performance, particularly through their shifts in procurement strategies (Loseby 1997; Green 2000; Farina 2002). By focusing almost exclusively on this group of actors, the literature has implicitly held the scope, scale and specialization of retailers' input needs constant, thus overlooking the influence of these factors on retailers' procurement

strategies. Meanwhile, research that has considered the role of smaller retailers (both supermarket and non-supermarket formats) has often sought to document to what extent they have emulated large chains' strategies (e.g. Shaw 1999) but not explicitly modeled how the underlying characteristics of these firms, including scope, scale and specialization, affect the strategies that they do use. The implicit assumption in these works is that a dominant strategy will emerge, and that those who can not or do not adopt that strategy will struggle to compete.

This paper examines the effects of scope, scale and specialization on procurement strategies, taking the stance that these variables have important effects for firms' competitiveness, through their influence on firms' procurement strategies. The paper challenges the notion that a single competitive procurement strategy model will emerge—that is, not all retail firms are following the same path to “modernization” as might be assumed by ignoring the scope/scale/specialization effects.

In pursuing this objective, two questions are addressed: 1) how are differing levels of scale, scope and specialization among individual retailers correlated with different patterns of procurement strategy decisions? 2) How do scale, scope and specialization affect the different components of procurement strategy decisions individually, specifically the choice of organization, source and governance?

The paper models procurement as a meta production function (reflecting the transformation of produce by retailers from an intermediate good purchased from a supplier to a final product for sale to the consumer) and specific production functions for the stages of that process (transaction and transformation). Treating the choice of procurement system as an adoption decision that requires different fixed and variable expenditures, we decompose the costs (transaction, transformation, and intermediate product) of alternative procurement systems to examine tradeoffs that might exist among different types of costs. Hypotheses are tested using descriptive statistics with tests for significance. Data is drawn from a survey of 33 fresh produce retailers in the city of Sao Paulo that was conducted in 2002.

2 Conceptual Framework & Implementation Model

The procurement strategy is comprised of the mix of organization, institutions and sources chosen by the retailer to perform the “production” processes noted above (transaction, intermediate product acquisition, and transformation). Three inter-related decisions determine the procurement strategy chosen. First, is the decision of how to organize procurement, specifically whether to have it be centralized or decentralized. Second is the source of produce, whether it be purchased direct from the growing region or from intermediaries in a central wholesale facility. Third, the retailer must choose institutions to support its transaction, specifically product standards and relationships with suppliers.

Centralized purchases and distribution are defined as those for which a central authority in the firm (such as the head office) is responsible for the majority of procurement and distribution tasks. These tasks include the decision of what and how much to order, selection of suppliers, submission of product orders, payment to suppliers, and the physical delivery of product to individual retail outlets. A decentralized strategy is one where either each individual store or a third-party is responsible for these activities.

Retailers can purchase fresh produce from a number of sources, which can be categorized as either wholesale sources or growers, and often purchase from a combination of different sources. In this analysis, purchases from wholesalers mean that the retailer buys at least 2/3 of its produce from wholesalers who are in the public wholesale markets and distributors who buy from the wholesale markets or growers and distribute to different retailers. If a retailer buys from growers, this means that at least 2/3 of his produce is sourced from growers, including both farmers and grower-packer-shippers who are based in the growing areas and sell both product that they have produced as well as produce purchased from other farmers.

There are also several alternative ways to govern transactions or relationships with suppliers. Informal relations with suppliers include both anonymous (“spot market”) relations in which the identity of the supplier is unimportant to the retailer, as well as ongoing but informal at-will relationships with suppliers. Formal relations include the use of “preferred supplier lists” or registries or formal contracts with suppliers.

Finally, the quality standards used can be informal or formal. Informal standards are those that rely on the default public standard (which is subjectively defined and not enforced) or shared understandings between the retailer and supplier of what the retailer’s needs are. Formal ones are explicitly defined, with published technical parameters, for example, and monitored.

Given its merchandising choices (including output mix and volume), the retailer must choose a procurement strategy consisting of organization, source and institutions (relationship and standards) that minimizes the cost of obtaining produce as an intermediate input and transforming it into a consumer-ready product. This cost is comprised of three parts. First, transaction costs (search, negotiation, and contract monitoring and enforcement, and other costs related to the acquisition of the intermediate input), second, the cost of the intermediate input, which in this case is the cost of the produce from the supplier, and third, transformation costs (including packing, packaging, sorting, delivery, storage and shrinkage of the product before sale to the consumer).

The retailer’s procurement strategy decision reflects a tradeoff between the three types of costs, and are themselves often seen in patterns. For example, purchases from the growing regions are often seen in combination with a centralized procurement and distribution system and formal relations with suppliers. Another common combination is decentralized purchases from the wholesale market in combination with informal relations with suppliers. The prior strategy tends to offer lower product acquisition costs but higher transformation costs as the retailer takes on many of the functions otherwise performed by intermediaries. In contrast, decentralized purchases from the wholesale market can reflect higher costs for product acquisition, but less transformation costs. The effects of different strategies, and in particular formal and informal relationships with suppliers is difficult to predict, however, as different types of transaction costs (such as search or quality verification) may have opposing effects.

The procurement strategy selection can be conceived of as analogous to a technology adoption decision where the retailer chooses the procurement system to minimize the total cost of presenting a shelf-ready product to the consumer.

Three variables are hypothesized to influence the choice of procurement strategy: scale, scope and specialization. Scale refers to the total throughput volume of fresh produce of a retail firm, and comes into play in two ways. First there is the potential for cost savings from economies of scale, particularly through large fixed investments in procurement facilities. Second there is the opportunity for a retailer to use market power as a means to reduce costs, most obviously by negotiating lower prices in the acquisition of intermediate products from suppliers, or by volume discounts. Market power can also potentially help reduce transaction costs if the retailer buys enough from individual suppliers that the suppliers' desire to maintain them as a client serves as an enforcement mechanism for any transaction agreements.

The second variable, scope, refers to the variety of different fresh produce products or items that are marketed by a retail firm. Like scale, scope can offer potential cost savings through investment in large capacity facilities and processes. Economies of scope will offer potential for cost savings if these facilities and processes can work with numerous different types of products at once. There is likewise a market power issue if retailers tend to purchase numerous products from the same suppliers, giving rise to the potential to negotiate price discounts if "bundles" of produce are purchased (analogous to volume discounts). Furthermore, if scope is small, then transaction and transformation expenses may be less important considerations for a retailer who will be dealing with fewer suppliers and fewer products, even as it is buying relatively more volume of each product than a firm of the same scale who has a larger scope.

Due to the potential for scale and scope economies and the consequent opportunity to spread large fixed costs over many items or a large volume, the levels of fixed investment versus variable expenditures required for different procurement strategies are central to the influence of both scale and scope in the retailer's procurement strategy choice.

Specialization refers to the degree to which a retail firm depends on fresh produce for its revenue flow, is also an important factor determining the relative benefits of different procurement strategies. If produce does not constitute a large portion of the retailer's total revenue, it might prefer to save on transactions and transformation expenses in exchange for a higher purchase price, as the former costs tend to be more demanding of the firm's internal resources (labor, space) than the latter. Conversely, as fresh produce becomes more and more important in a firm's revenues, then it can devote more internal resources to its transformation.

3 Empirical Context and Hypotheses

Sao Paulo is home to a diversity of retailers, reflecting a broad range of scales, scopes and degrees of specialization. For the purpose of illustration, four types of retailers can be generalized as active in Sao Paulo's fresh produce markets. The first group is large modern supermarket and hypermarket chains. These firms are general-line merchandisers, carrying both food and non-food items. Though they are not specialized in fresh produce markets, their scale tends to be very large, as can their scope. The second group are smaller supermarkets, both traditional and modern, existing as independent firms or in small chains. These are also general-line merchandisers and as such are not specialized in fresh produce. Both their scale and scope tend to be small, but scope especially tends to vary broadly. The third group is discount green grocers. These firms are specialized in the sale of perishables, with a

strong or even exclusive focus in fresh produce. They tend to have large scales but a relatively limited scope, reflecting their discount orientation. Finally, there are the open-air fair vendors who specialize in fresh produce and work on a small scale. These generally tend to focus on sales of only one segment of the fresh produce market, for example leafy greens, thus their scope tends to be very small. The characteristics of the different retailers with respect to scale, scope and specialization are summarized in Table 1.

Table 1 Scale, scope and specialization of Sao Paulo’s retailers

	Supermarket & Hypermarket Chains		Small and Medium Supermarkets		Discount Green Grocers		Open-Air Fair Vendors	
Scale (Total FFV m2)	Large		Small		Large		Small	
(Mean/Std. Dev.)	39,188	13,955	202	134	2,473	1,241	23.3	3.3
(Min/Max)	4,950	105,120	12	1,000	100	12,000	10	40
Scope (Number of items)	Large		Small		Small		Small	
(Mean/Std. Dev.)	377	32	232	105	110.6	15.7	42	6.4
(Min/Max)	285	450	8	800	50	200	10	80
Specialization (% revenue from FLV)	Low		Low		High		High	
(Mean/Std. Dev.)	8.6	1.1	14.6	4.4	89.2	5.3	94	6.4
(Min/Max)	5	11	2	33	50	100	30	100

The hypothesized effects of scale, scope & specialization on firms’ choice of procurement organization, source and institutions are summarized in Table 2, and outlined in detail below.

Table 2: Summary of hypothesized effects of scale, scope & specialization procurement strategy

	Organization (Centralization)	Source (Purchases from Grower)	Relationship & Standard (Formal)
Scale	+	+	+
Scope	+	-	-
Specialization	+	+	No <i>a priori</i> expectation

Hypothesis: Scale, Scope & Specialization Effects on Organization of Procurement

It is hypothesized that the decision to centralize procurement will be positively correlated with a firm’s scale and scope. In general, the decision to centralize involves large fixed capital investment costs, but carries relatively low operating expenditures, while the decentralized system has low fixed capital costs, but relatively high operating expenditures. This means that there are numerous opportunities for scale and scope-related cost savings. These are summarized with respect to the costs incurred in transactions, intermediate goods acquisition, and transformation activities in Table 3.

A high degree of specialization is also hypothesized to be correlated with the decision to centralize. This is because a highly specialized firm might be expected to have its resources dedicated to specialized procurement activities within the firm, which is consistent with a centralized procurement strategy in which a core set of resources (i.e. labor and facilities) are dedicated to procurement and transformation activities for all the stores in the firm. A centralized organization by a highly specialized firm would be especially reflective of economization on transaction and transformation costs.

Table 3 Costs of centralized versus decentralized procurement strategies

	Centralization	Decentralization
Transaction costs	High fixed capital investments -Centralized purchase order system -Communications equipment & logistical system (email & fax ordering, business-2-business communication)	High variable expenditures -Individual orders/store -Product inspection -Communications (direct personal contact or phone)
Intermediate goods acquisition	Low cost/unit -Purchases direct from grower possible -Vertical integration of intermediary functions possible	High cost/unit -Purchased further along marketing chain and with more value-added services
Transformation costs	High fixed capital investment -Construction of centralized purchase and distribution center (e.g. CBD, Brazil's largest retailer, spent approximately US\$10 million in 2001 building a purchase and distribution center for perishables).	High variable expenditures -Grading -Shrinkage

Hypothesis: Scale, Scope & Specialization Effects on Source

Due to the nature of the services they provide and their location along the marketing chain, among other factors, purchases from the growing region and wholesale markets differ substantially in terms of the prices, transaction and transformation costs they entail. One of the key factors distinguishing growers vs. wholesale market intermediaries as suppliers to retailers is the ease with which substitutes can be found if a supplier falls through on any given transaction. In general, wholesale intermediaries are easily substitutable—they concentration in a centralized physical location (the wholesale market) means that alternative suppliers can be found should a specific supplier fall through. In contrast, growers tend to be physically dispersed and less easily substitutable, suggesting that there will be important differences in business practices of the two—a reliance on advance purchase orders submitted to growers, for example, versus more day-of purchases from wholesalers. Thus, buying direct from the growing region can be expected to entail higher fixed transaction costs but lower variables ones, all else held equal (including relationships with the suppliers and use of quality standards). The grower will tend to require more established relationships in which product

requirements and purchases are fixed in advance. This means high fixed search costs (for the supplier, not the product) but lower costs for monitoring, etc. Thus larger scale retailers are hypothesized to be more likely to buy from growers. The same hypothesis does not hold for scope. A retailer with a large scope will have more products to purchase, and unless individual growers can meet numerous product needs at once (referred to above as bundling) then it is more likely to economize on transaction costs by seeking out suppliers where they will be concentrated, in the wholesale market.

A high degree of specialization is hypothesized to increase the likelihood of purchases from the growing region. This is because a firm that is more reliant on fresh produce for its revenue can be expected to invest more of its limited resources in product acquisition and transformation, particularly if it results in savings on purchase costs as is likely with purchases from the growing region.

The analysis of procurement costs for purchases from wholesalers versus growers is summarized in Table 4.

Table 4 Costs of purchasing from growers versus wholesalers

	Growers	Wholesale market
Transaction costs	High fixed capital investments -Creation & implementation of contracts	High variable expenditures -Maintenance of ongoing relations with suppliers -Product inspection
Intermediate good costs	Low cost/unit -Purchases direct from grower -Vertical integration of intermediary functions	High cost/unit -Purchased further along marketing chain and with more value-added services
Transformation costs	High variable expenditures -Grading	Potentially lower due to services provided by wholesaler

Hypothesis: Scale, Scope & Specialization Effects on Relationships & Standards

The third decision regards the institutions that will support the transaction and indirectly influence acquisition and transformation costs, specifically product standards and relationships with suppliers. With regard to product standards, the retailer can choose to utilize existing public standards or promulgate its own private standards. Relationships can either be constituted by formal contracts or informal ongoing relationships. These two decisions will be key to ensuring that the organization and source decisions perform to their potential.

The choice of whether to rely on formal or informal relationships with suppliers and standards, both institutions underlying procurement transactions, are expected to be similarly affected by scale, scope and specialization. There are two reasons underlying this expectation: First, both relationships and standards reflect similar economic characteristics in terms of having high costs to establish and potentially low monitoring and enforcement costs on a per-unit basis. Second, the choices have an interactive aspect, for example a retailer who imposes a private standard the requires asset specific investment on the part of a supplier (such as investments in food safety certification), can help to mitigate the vulnerability of the supplier to opportunistic behavior by offering a formal contract

(Mainville et al 2005). Given the weak institutional environment in Brazil, particularly the lack of enforced public grades and standards for vegetables, the decision to rely on public standards reflects high variable transaction and transformation costs, as good quality product must be searched for (often on the basis of physical inspection of the product), and sort and shrinkage costs will typically be high. The decision to promulgate private grades and standards, on the other hand, involves high fixed costs of establishing the standards and findings suppliers who are willing and able to meet them, but once established, monitoring and enforcement costs should be low, particularly if a formal contractual relationship is maintained. Thus firms with larger scales can be expected to be more likely to rely on formal standards. In contrast, for a retailer with a large scope, the high cost of establishing standards for each individual product it carries and the accompanying transaction costs of monitoring and enforcing the standard can be expected to increase the likelihood of relying on a public standard. The degree of specialization in fresh produce does not carry any a priori expectations.

Summaries of the rationale underlying hypothesized effects for the decisions regarding choice of standards and relationships with suppliers are given in Tables 5 and 6 respectively.

Table 5 Costs of using informal (public) versus formal (private) input quality standards

	Informal Standards	Formal Standards
Transaction costs	-Easy to find suppliers	-High fixed costs of defining standards -High variable costs of monitoring suppliers' compliance with standards
Intermediate good costs	-Low intermediate good costs	-High product costs due to its being value-added and asset specific
Transformation costs	-High sorting, re-classifying costs, high shrinkage	Low fixed and variable expenditures on transformation

Table 6 Costs of relying on formal relationships versus informal relationships with suppliers

	Formal Relationship	Informal Relationship
Transaction costs	High fixed capital investments -Creation & implementation of contracts	High variable expenditures -Maintenance of ongoing relations with suppliers -Product inspection
Intermediate good costs	Low cost/unit -Purchases direct from grower -Vertical integration of intermediary functions	High cost/unit -Purchased further along marketing chain and with more value-added services
Transformation costs		High variable expenditures -Grading -Shrinkage

4 Data & Methods

Data are drawn from the results of a survey of 33 retailers in metropolitan Sao Paulo, conducted in 2002. The survey collected information on the characteristics of the retailers, their product offerings, and procurement strategies. The survey differentiated between procurement strategies for lettuce and tomato—these are two of the most important produce items in the Sao Paulo area, both in production and consumption, yet their marketing chains are vastly different due to the characteristics of each product. Specifically, compared to tomato, lettuce is highly perishable, particularly given the lack of a cold chain in the area. Furthermore, lettuce is not subject to mechanical classification and grading, which facilitates sales direct from the farm to retailers, rather than necessitating that the product pass through a classification facility, as it does in the case of tomato.

The data are analyzed in two different ways. First, cluster analysis is used to group retailers on the basis of their choices of how to organize, source, and govern their procurement. Separate groups with characteristic procurement strategies are distinguished for tomato and lettuce, and descriptive statistics are used to test hypotheses regarding the influence of scale, scope and specialization on these strategies. Second, the procurement strategies themselves are decomposed, and hypotheses regarding the influence of scale, scope and specialization are tested for each component (these being organization, source and relationship) individually, for tomato and lettuce separately.

At their absolute levels, the data have a non-normal distribution. A logarithmic data transformation fails to induce a normal distribution of the data, however it does lead to the failure to reject the hypothesis that the data from different groups have equal variance. The non-normal distribution requires nonparametric methods, which combined with the equal variance among groups, make the Mann-Whitney rank sum test to test for differences between groups on the basis of the hypothesized variables appropriate (SPSS, 1999).

5 Results & Discussion

Cluster analysis of retailers' choices of procurement strategy for tomato and lettuce led to the identification of two groups, each with a characteristics procurement strategy. The two characteristic procurement strategies for tomato were 1) reliance on centralized organization or procurement, purchases from the growing region, and formal relationships with suppliers, and 2) reliance on decentralized organization, purchases from the wholesale market, and informal relations with suppliers. The two general procurement strategies identified for lettuce were largely similar—one group purchased from the wholesale market, and another group purchased from the growing region, but in both cases purchases were decentralized and informal relations with suppliers were predominant. The tendency to rely on decentralized purchases for lettuce are likely due to the high perishability of lettuce, which can encourage direct distribution among stores rather than routing the product through a central private distribution center, particularly given the lack of a cold chain.

Note that in the tables of results that follow, mean values for hypothesized variables are provided for illustrative purposes only—the existence of a non-normal distribution negates the value of using means for the calculation of statistical significance of the variables.

Table 7 Scale, scope and specialization effects on procurement strategy for tomato

Variable		Centralized, Grower, Formal	Decentralized, Wholesale, Informal
Participation in cluster		21%	79%
Scale, scope & specialization by cluster type			
Scale	Mean	35,508	942
	P-value	.001	
Scope	Mean	246	98
	P-value	.027	
Specialization	Mean	55	63
	P-value	.618	

Tables 7 and 8 summarize the results of tests for differences in the groups belonging to each cluster for tomato and lettuce respectively. As can be seen, scale, scope and specialization have differing influences depending on the product. For tomato, a large scale and scope of operations has a strong correlation with the use of a centralized procurement system that sources from the growing region with formal relations with suppliers. Specialization has no statistically significant effect however. For lettuce, the results differ—here, and consistent with the results from tomato data, a larger scale of operations is correlated with purchases from the growing region. In contrast to tomato, however, scope has no statistically significant correlation, while those firms that are less specialized in fresh produce sales also increase from the growing region with more frequency than the highly specialized firms. This last result runs contrary to expectations—it was hypothesized that highly specialized firms would have the incentive to buy direct from the growing region, in order to save on purchase and transaction costs and to ensure the highest possible quality.

Table 8 Scale, scope and specialization effects on procurement strategy for lettuce

Variable		Decentralized, Grower, Informal	Decentralized, Wholesale, Informal
Participation in cluster		59%	41%
Scale, scope & specialization by cluster type			
Scale	Mean	14737	212
	P-value	.023	
Scope	Mean	176	159
	P-value	.129	
Specialization	Mean	44%	91%
	P-value	.009	

Tables 9 and 10 report the results of hypothesis testing for the effects of scale, scope and specialization on specific components of retailers’ strategies for the procurement of tomato and lettuce respectively. For tomato, increases both scale and scope are associated with reliance on centralized procurement, while specialization has no statistically significant effect. These results are consistent with hypotheses. For lettuce, in contrast, none of the hypothesized variables are associated with an increase in use of centralized procurement—indeed only one firm in the sample did, indeed, rely on such an organizational strategy for procurement. Comparing this to the results for tomato suggests that in the current environment, the characteristics of lettuce are such that potential efficiency gains to procurement through centralization are insignificant compared to the costs of such a strategy—most likely reflected in high rates of product spoilage and lower quality (hence lower sale prices).

In terms of retailers’ sourcing strategies for tomato and lettuce, the results again support the hypothesis that scale and scope encourage purchases from the growing region, while specialization again has no statistically-significant correlation. For lettuce, in contrast, increases in scale and decreases in specialization are shown to be correlated with purchase from the growing region, while scope has no statistically significant result.

Finally, scale and scope are both shown to have statistically significant relationships to the governance of relations with suppliers (whether formal or informal) for both tomato and lettuce, and specialization is also negatively correlated with reliance on formal relations with suppliers. It should be noted, too, that unlike organization and source decisions which frequently varied for tomato and lettuce within specific firms, all firms in the sample had consistent choices between formal and informal relations for both products—that is to say, no firm chose a formal strategy for one product and an informal one for the other. Note that with only two exceptions, all firms were consistent in their use of formal vs. informal relationships and standards, hence data was analyzed with respect to relationships alone.

Table 9 Decomposition of tomato procurement strategies by firm scale, scope & specialization

Variable		Organization		Source		Relationship	
		Centralized	Decentralized	Grower	Wholesale	Formal	Informal
Scale	Mean	23855	841	25675	308	43923	1365
	P-value	.000		.070		.019	
Scope	Mean	206	125	206	94	512	100
	P-value	.023		.044		.002	
Specialization	Mean	70%	61%	63%	60%	15%	66%
	P-value	.915		.518		.085	

Table 10 Decomposition of lettuce procurement strategies by firm scale, scope & specialization

Variable		Organization		Source		Relationship	
		Centralized	Decentralized	Grower	Wholesale	Formal	Informal

Scale	Mean	4950	6895	12,285	213	65840	948
	P-value	.296		.055		.002	
Scope	Mean	n.a.	150	153	159	368	142
	P-value	.640		.374		.052	
Specialization	Mean	5%	60%	52%	91%	10%	70%
	P-value	.709		.037		.011	

6 Summary & Conclusion

Tests of hypotheses regarding the relationship between retailers' scale, scope and specialization and their procurement strategies for fresh produce yielded interesting results. Taking a bird's-eye view, scale and scope were shown to be positively correlated with participation in clusters that relied on centralized procurement, purchases from the growing area, and formal institutions to govern procurement of tomato. For lettuce, in contrast, firms choosing to purchase direct from the growing regions were shown to have a significantly higher scale, and lesser degree of specialization, than those purchasing from wholesale markets, despite the clusters sharing the same organizational and institutional characteristics.

Table 11 Comparison of hypotheses to empirical results for decomposition of procurement strategy

	Organization (Centralization)		Source (Purchases from Grower)		Relationship & Standard (Formal)	
	Hypoth.	Result (Tomato/Lettuce)	Hypoth.	Result (Tomato/Lettuce)	Hypoth.	Result (Tomato/Lettuce)
Scale	+	+ / x*	+	+ / +	+	+ / +
Scope	+	+ / x	-	+ / x	-	+ / +
Specialization	+	x / x	+	x / -	No <i>a priori</i> expectation	- / -

* "x" indicates that no significant correlation was found

By decomposing the procurement strategy, greater insight into the effects of scale, scope and specialization on specific aspects of the strategy could be obtained. Results here were consistent with those obtained by analyzing the procurement strategies as clusters, but offered greater insight into factors influencing adoption of specific aspects of the procurement strategies for different products. Overall, the effects of scale on procurement strategy decisions was as hypothesized. Scope was shown to have similar effects as scale, being associated with an increase in purchases from the growing region and greater reliance on formal relations. Specialization, on the other hand, was shown to be negatively correlated with these practices.

The significance of these results lies in the insight they provide into the diverse procurement strategies employed by retailers in Sao Paulo's fresh produce markets, and their affirmation of the relevance of

these diverse strategies to the economic vitality of these heterogeneous actors. Further research is needed to better understand the effects of these variables, and others, on procurement strategies.

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