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Influence area as competitiveness' indicator for retail clusters

Área de influência como indicador de competitividade de clusters varejistas

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Abstract
Organizations are facing increasingly competitive environments and, in this sense, are adopting, among other strategies, more cooperative approaches based on collective operation perspectives. Commercial business concentrations offering related products to end consumers, treated in this paper as retail clusters, are a generally successful example of this stance type. In this context, this study aims to investigate this phenomenon, focusing on the ownership of the influence area concept as a consistent and relevant indicator in the assessment of the retail cluster's competitiveness. We have opted to investigate pub clusters for the field study. Based on the literature review, we sought to raise the theoretical foundation and empirical evidence to support the hypothesis of significant association between competitiveness and influence area for retail clusters. The results show consistent indications of the relationship between competitiveness and secondary and tertiary influence areas of retail clusters, offering an innovative contribution in the assessment of retail clusters' competitiveness, as well as the feasibility for using the influence area as a relevant marker to clusters management.
Keywords: Commercial concentrations; Retail clusters; Business network; Influence area; Competitiveness.

Resumo
As organizações estão enfrentando ambientes cada vez mais competitivos e, neste sentido, adotando, entre outras estratégias, abordagens mais cooperativas e baseadas em perspectivas coletivas de operação. Concentrações comerciais de negócios oferecendo produtos correlatos para consumidores finais, tratados neste trabalho como clusters varejistas, constituem um exemplo, em geral, exitoso desse tipo de postura. Nesse contexto, este estudo tem como objetivo investigar esse fenômeno, focalizando na propriedade do conceito de área de influência como um indicador consistente e relevante na avaliação da competitividade de clusters varejistas. Optou-se pela investigação de clusters de bares para o estudo de campo. Com base na revisão da literatura, buscou-se levantar fundamentação teórica e evidências empíricas que sustentassem a hipótese de associação significante entre competitividade e área de influência para clusters varejistas. Os resultados apresentam indicações consistentes de relação entre competitividade e áreas de influência secundária e terciária de clusters varejistas, oferecendo um aporte inovador na apreciação da competitividade deles, assim como a viabilidade de utilização da área de influência como um marcador relevante na gestão dessas aglomerações.
Palavras-chave: Concentrações comerciais; Clusters varejistas; Redes de negócios; Área de influência; Competitividade.

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1 Introduction

In the environment characterized by the economy of globalized markets, organizations manifest greater interest in working on the development of organizational networks, building relationships of commitment with the social group in which they are inserted (Asalos, 2012; Aydalot & Keeble, 2018; Camagni, 1991; Siqueira & Telles, 2012). Concentrations of geographically close businesses operating with correlated offerings, such as industrial, retail, and tourism business clusters, among others, are understood as organizational networks operating as integrated systems. Hence, these arrangements involve the management of tangible and intangible resources, generating profit when considering income and costs (Schwab, 2016). The interaction between the actors in the clusters implies the construction of cooperation and trust (Giglio & Hernandes, 2012), enhancing the competitive capacity of these organizational relationships. Retail commercial concentrations operate with their own logics and values, such as commitment and survivability, guided by the interest of concentrating on their core competencies and particularly reconciling actions aimed at a common goal with other organizations (Pereira, Pole, & Sarturi, 2013).

Contemporary organizations have been undergoing significant changes, progressively differentiating themselves from the hierarchical organizations of the Fordist conception of production, adopting new operation configurations and choosing to intensify integration with other businesses, thus experiencing greater access to competitive advantages associated with the development of innovation capacity and flexibility in the use of structure and cost reduction (Casarotto Filho & Pires, 2001).

Commercial concentrations present competitive advantages and advances in their ability to survive (Porter, 1990; Schmitz & Nadvi, 1999; Zaccarelli, 2000). Shopkeepers tend to be poles that generate jobs, resulting in different benefits for employees, i.e., cost reduction in shared transactions and improved ability to solve common problems, for example, the supply problem, consumer satisfaction and, consequently, the reduction in tax and income inequality (Human & Provan, 1997). Therefore, commercial concentrations offer correlated products (such as, for example, pubs, party items, clothing and wedding items) and are a phenomenon aligned with the interest of end consumers (people, couples and families), comprising a concentrated space with a greater offer of products, prices, payment options, variety of products

and services (Biba, Thériault, Villeneuve, & Des Rosiers, 2008; Telles, Siqueira, Donaire, & Gaspar, 2013).

Commercial concentrations have stimulated organizations to consider the final consumer's purchase choice process (Clapp, Ross, & Zhou, 2015), and the variety and assortment of products or services offered attract end consumers (Jolson & Spath, 1973; Sinha & Banerjee, 2004). Social, cultural and situational factors, such as the image of suppliers, available brands, products, prices, service, location and perceived quality, are known to condition the choice and purchase decision of end consumers (individuals, couples and families) (Clapp et al., 2015; Nicholson & Snyder, 2012).

The concept of area of influence, as a variable associated with the distance of travel from end consumers to retail units, offers a relevant indication for the management, control and planning of commercial operations oriented to end consumers, which means, an important instrument in the evaluation of performance and in the construction of strategies for retailers (Peterson, 1974). The seminal works dealing with this concept can be attributed to Applebaum (1966) and Huff (1964), although some previous studies have suggested this idea (Converse, 1949; Reilly, 1929). The Geographical Information System (GIS), for example, is the basis for a software capable of generating and mapping spatial data for the analysis and representation of geographic information of operations and, in this sense, of areas of influence, allowing associations and relationships between variables and business indicators, such as demographic density, location of customers and location of retailers. among others (Cui, Wang, Pu, Ma, & Chen, 2012).

Geographic concentrations of end-consumer-oriented businesses with correlated offers are treated as retail clusters by the literature (Siqueira & Telles, 2012; Telles, Arten, Queiroz, & Cunha, 2020). The study developed by Telles, Altheman, Siqueira e Romboli (2011) focuses on agglomerations of pubs in the city of São Paulo, seeking to recognize which concentrations effectively behave as business clusters, according to the perspective of the Fundamentals of Competitive Performance proposed by Zaccarelli, Telles, Siqueira, Boaventura e Donaire (2008). It can be inferred from this article that concentrations of pubs with a higher composition of characteristics such as comprehensiveness, specialization, balance, complementarity of offers, as well as cooperation, community culture and governance, constitute an integral system with greater competitiveness than isolated pubs or spatially concentrated pubs, but without these developed attributes.

Combining the concept of area of influence, a recognized metric for evaluating the performance of retail units, and retail clusters as integral systems, it was decided to investigate the area of influence as an indicator of the competitiveness of these arrangements. In other words, as in the evaluation of individual stores, the area of influence presents itself as a potentially competent metric in the evaluation of the competitiveness of retail clusters. Therefore, the financial performance composed of the retail units that make up the clusters surveyed was adopted as a proxy for the competitiveness of these arrangements.

Thus, the objective of the study is to contribute to the advancement of knowledge of the phenomenon of retail clusters, constituting an option of supply valued by the final consumer, due to access to the variety of products, services, costs and innovation for purchases (Porter, 1998; Siqueira & Telles, 2012; Siqueira, Telles, Rocca, & Gaspar, 2015; Zaccarelli et al., 2008). The conception of this work evaluates the measurement of the competitive capacity of these arrangements based on a simple, consolidated metric that is extensively used in retail. The research problem can be described as the propriety or feasibility of evaluating the competitiveness of retail clusters through the area of influence, and the following research question was adopted: is it possible to establish a significant association between the competitiveness of retail clusters and their area of influence?

Hence, the research is based on the exploratory use of a retail concept associated with the approach of business clusters to gain understanding and information about the operation of commercial concentrations with correlated offers for end consumers, understood as retail clusters (Zaccarelli et al., 2008).

2 Theoretical Backgrounds

In the existing literature, there is a scarcity of research focused on retail indicators as a means of evaluating the competitive capacity of commercial concentrations, especially oriented to the attractiveness of the consumer market. Due to the absence of competitiveness indicators for commercial concentrations and the suggestions offered by Zaccarelli et al. (2008), the area of influence metric, consolidated in retail studies for isolated units, was chosen as a potential marker of the competitive capacity of commercial concentrations.

2.1 Clusters as business networks

The beginning of the nineteenth century was marked by the evolution of business clusters, studied by Alfred Marshall as phenomena of the agglomeration of companies in correlated business segments in a given region, in the search for positive and competitive results (Marshall, 1920). For the development of business clusters, collective actions among their actors are highlighted with the aim of achieving common goals. Competitiveness does not begin with individual companies, it highlights the relationship of competitiveness within certain business conditions in the same geographical area, calling a cluster as an informal company (Porter, 1990, 1998).

In the initial process of agglomeration, it is possible to verify benefits for companies, but not necessarily perceived during the operation of clusters (Zacarelli, 2004). The procedures such as the choice of the buyer's location and the definition of the location result from two opposing forces: (1) one associated with the interests of the buyers and which acts in the sense of bringing the organizations closer together, strengthening the formation of a cluster, and the other associated with the interests of the organizations, which proceeds in the opposite direction (Zaccarelli, 2004). Business clusters can be identified where there is a significant concentration of companies located in the same region with correlated offerings. Reduced bureaucracy and informality show greater competitiveness, reducing opportunistic behaviors in an efficient way in the concentration of business (Arten, 2013; Staber, 2007).

2.2 Retail Clusters

Retail clusters can be understood as a phenomenon related to business clusters (Teller & Elms, 2010; Teller & Reuttere, 2008), defining them as specialized retail clusters concentrated in a given region. Business clusters, in general, can be understood as any concentration with correlated offers, involving different industrial sectors/activities, such as production (shoes in the city of Franca and Birigui (Siqueira, Gerth, & Boaventura, 2011), tourism (hospitality as a basis for local development (Martins, Fiates, & Pinto, 2016)) and technology (collective activity and productivity of cutting-edge inventors (Moretti, 2021), among others.

Retail clusters are interdependent organizations, connected through a set of value-added products or services (Roelandt & Den Hertog, 1999). In large cities, such as São Paulo, there are places whose stores specialize in shops and services of certain products, such as: Rua São Caetano – specializing in bridal clothing and accessories; Rua Santa Ifigênia – specialized in

electronics and computer articles; Av. Marechal Tito – specialized in vehicle shops, among others (Fitipaldi & Donaire, 2017).

Relationships take place under the cloak of social structure in the information age, where the final consumer has his identity developed in social interactions and must be involved even in commercial interactions in a relationship of participation without homogeneity or pattern (Castells, 2000). Thus, the theory of retail clusters based on the social relationship must include, in relation to the business, the final consumer as an active actor in this relationship. Therefore, the social relations of business clusters are decisive for the understanding of formation, evolution, continuity, advantages, collective and individual objectives. According to Uzzi (1997), for the understanding and importance of social relations, which characterize clusters, the bonds between actors imply proximity and security, as well as restrictions that can limit the group's actions and innovations.

Retail clusters can be understood as commercial concentrations based on their configuration consisting of different geographically concentrated businesses, maintaining relationships of different natures, involving values, products, services, interests, information and affective ties (Bisset, 2004; Christaller, 2000; Porter, 1990; Siqueira & Telles, 2006; Siqueira et al., 2015). Retail clusters have scientific research predominantly formed by theoretical concepts developed for business clusters (Porter, 1998; Telles et al., 2013; Zaccarelli et al., 2008). It can be admitted, as a starting point, that one of the fundamentals of the competitiveness of retail clusters can be associated with the attractiveness of end consumers, which tends to expand due to the value offered by these sets of stores, either by the return and/or dissemination of the advantages offered by these arrangements (Telles et al., 2013).

2.3 Area of influence: Concepts and relevance to retail

Increasingly, competition is established based on competition and the relationship between organizations and clusters (Suzigan, Cérron, & Diegues Jr., 2005; Zaccarelli et al., 2008). It should be recognized that vertical and/or horizontal organizational ties determine limitations and opportunities for organizations (Gulati, Nohria, & Zaheer, 2000). Retail clusters can be identified as structures resulting from the interconnection between suppliers, government and research institutes, among other actors (Ebers & Jarillo, 1997), constituting evolutionary systems with their own dynamics and reconfigurable over time. In a retail cluster,

the participants, recognized as actors, can be understood as links, sharing something in common, characterizing an integral and autonomous system, and distinguishing each cluster by its set of actors and established connections (Castells, 2004; Gulati & Gargiulo, 1999; Uzzi, 1997).

Retail clusters present a high offer of related products, which is a factor of attractiveness for end consumers, due to the variety, assortment and provision of services, especially with information and clarifications, in addition to the feeling of fair price, due to the level of competition present. These can be recognized as the reasons for satisfaction with the supply available in these regions (Teller, 2008). However, the motivations for retailers to operate and maintain their establishments in an environment of apparent competitive turbulence are not yet sufficiently established, requiring permanent investments, innovations and adaptations, with higher probable uncertainties. According to the strategic logic of any profitable operations, the return on capital must adequately compensate for investments and risks.

The attractiveness of these geographically concentrated organizational groups, indicated by the maintenance of competitiveness over time, leads to the need to understand the fundamentals responsible for the coexistence of businesses in open competition, such as the demand for constant innovations and adaptations, the high attractiveness of consumers and the apparently contradictory longevity of business operations. Thus, the literature points to conditions and processes associated with companies operating in retail clusters that would justify this situation by the involvement of the capacity for innovation, learning and absorption of new technologies (Adizes, 2004; Drucker, 2003; Geus, 2005; Mayfield, Mayfield, & Stephens, 2007; Montuori, 2000).

The term area of influence, linked to the geography of the trade area (TAG – Trade Area Geography), derives from the perspectives of trade area (TAD – Trade Area Demand) and trade area heterogeneity (TAH – Trade Area Heterogeneity), whose definitions are established below:

(1) TAG (Trade Area Geography): geographic dimension of the trade area, i.e., a measure of the area comprising the actual operation of the business within a given period of time (Applebaum & Cohen, 1961). The geographically concentrated region of stores, including end consumers, has a greater perspective of purchasing products or services offered for sale (Huff, 1964);

(2) TAD (Trade Area Demand) or Commercial Area Demand: degree of purchase intention of the final consumer within the geographically concentrated trade area, i.e., consumption potential of the trade region offering products; and

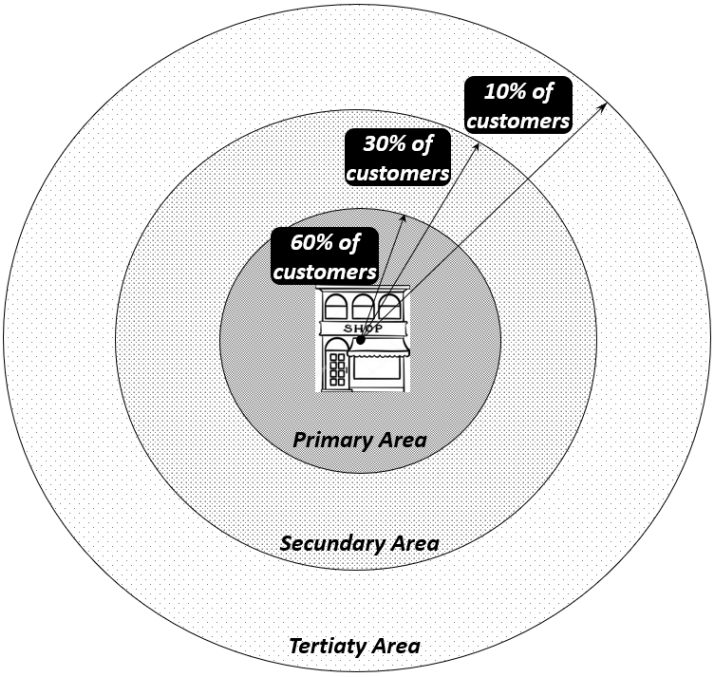
(3) TAH (Trade Area Heterogeneity): variety of consumer demand for products and/or services offered, i.e., heterogeneous offers associated with the greatest variety of products. This corresponds to the fact that TAH is not necessarily associated with GAD, although the concepts TAD and TAH present a positive association, as well as differences in heterogeneity between trade regions with similar demands (Rosenbloom, 1976).

The methodology of studies on areas of influence was originally developed by the Geographical Information System (GIS), arousing managerial and academic interest from researchers and scholars. This methodology makes it possible to associate information such as demographic density, location of customers, position of retailers, thus allowing the development of market analyses and the mapping of regions/locations of origin, as well as awareness of supply by consumers (Aranha, 1997). The area of influence, in this sense, corresponds to a surface that theoretically delimits the set of final consumers of a given retail offer. Based on the concepts of TAD and TAG, the area of influence is indicated by the greatest recognized distance related to the greater displacement verified by buyers from their place of origin to the retail space.

The concept of area of influence is strategically composed of 3 concentric areas, identified as primary, secondary and tertiary areas (Figure 1). The primary area comprises 60% of the customers closest to a reference retail unit; the secondary area corresponds to the 30% of customers not included in the primary area; The tertiary area is associated with the radius of the circle that determines the greatest distance of displacement from an end consumer to a retail business, defining the theoretical area of displacement of customers.

Figure 1

Primary, secondary and tertiary area



2.4 Area of influence: competitiveness indicator of retail clusters?

Studies focused on the competitiveness of retail clusters robustly suggest a positive and significant association with the attractiveness of customers, consisting of end consumers, referring to the apparent capacity of this variable as a predictor of the competitive capacity of these arrangements (Telles et al., 2013; Sátyro, Telles, Machado, & Queiroz, 2017). The understanding and recognition of models of concentration and dispersion of final consumers around retail units point to the feasibility and applicability of indicators that represent conditions, extent, and characteristics of these surrounding areas and annexes to commercial spaces (Parente & Kato, 2001).

Thus, attractiveness as the ability to attract end consumers, defined as the convergence between the final consumer's perspective and the retail perspective (Telles et al., 2013), is directly related to the concept of the area of influence. In other words, the area of influence can be used as a potential measure of the attractiveness of retail clusters, as well as a metric for evaluating their competitiveness. The premise is based on the logic that consumers seek to find balance and convenience between businesses located in the vicinity of their position of origin and in more remote locations, involving costs, time and travel efforts combined with conditions of variety, assortment and services.

Retail clusters, understood as sets of geographically concentrated retail units with correlated offers, arouse academic and managerial interest due to peculiar characteristics associated with their differential competitiveness (Aguiar, Pereira; Donaire, & Nascimento 2017; Siqueira et al., 2015; Zaccarelli et al., 2008). The investigation of a metric endowed with simplicity of data capture and processing as a marker of competitiveness, becomes relevant as it offers an instrument for the management and planning of commercial concentrations both in the comparative and in the absolute perspective. The area of influence, in this sense, apparently has these characteristics. Competitiveness can basically be associated with two perspectives: efficiency and performance (Haguenauer, 2012). We opted for the performance proxy for competitiveness, with markers such as profitability, sales volume, market share and revenue (Zaccareli et al., 2008). In order to evaluate the ownership of this metric as an indicator of competitiveness of retail clusters, the following hypotheses were formulated:

Hypothesis 1: The size of the area of influence presents a positive and significant association with the performance of pubs in retail clusters.

This hypothesis, due to the staggered understanding of the concept of area of influence into primary, secondary and tertiary, was decomposed into 3 underlying hypotheses:

H1a: The size of the primary area of influence presents a positive and significant association with the performance of pubs in retail clusters.

H1b: The dimension of the secondary area of influence presents a positive and significant association with the performance of pubs in retail clusters.

H1c: The dimension of the tertiary area of influence presents a positive and significant association with the performance of pubs in retail clusters.

Hypothesis 2: The relationship between areas of influence of competing retail clusters, as measures of their performance, reflect the competitive capacity of these clusters.

This hypothesis, due to the staggered understanding of the concept of area of influence into primary, secondary and tertiary, was decomposed into 3 underlying hypotheses:

H2a: The relationship between the primary catchment areas of competing retail clusters reflects the comparative competitive capacity of these clusters.

H2b: The relationship between the secondary areas of influence of competing retail clusters reflects the comparative competitive capacity of these clusters.

H2c: The relationship between the tertiary catchment areas of competing retail clusters reflects the comparative competitive capacity of these clusters.

3 Methodology

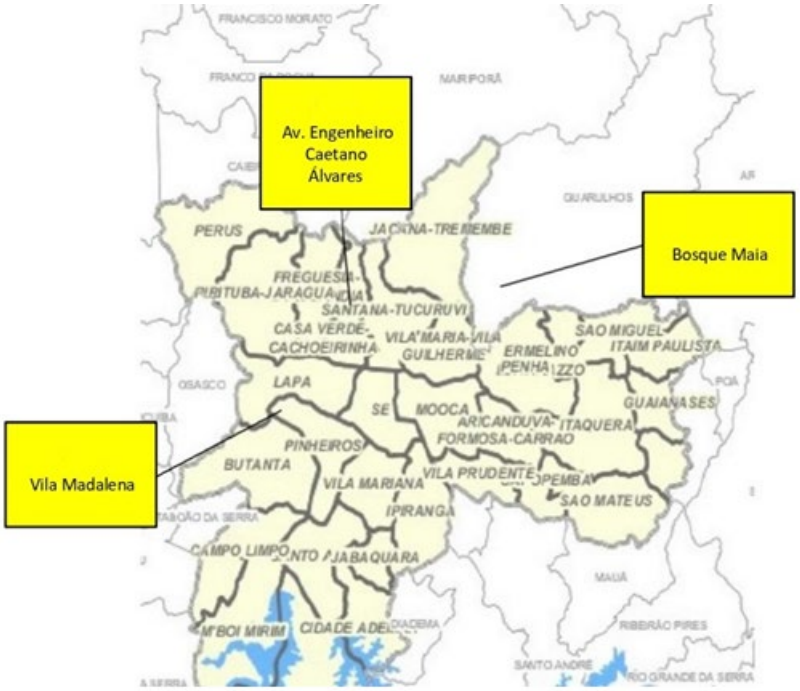
The methodological approach can be classified basically as exploratory, descriptive and explanatory (Gil, 2008). The research developed has a quantitative nature, aimed at an investigation that can be measured, with the objective of understanding: (1) the relationship between area of influence and competitiveness; and (2) the relationship between the areas of influence of competing retail clusters and the comparative competitive capacity of these clusters.

As a field of research, it was decided to develop the investigation in clusters of recognized pubs in the region of Greater São Paulo, São Paulo, Brazil, being investigated the regions of Vila Madalena, in the west zone of the city; Avenida Engenheiro Caetano Álvares, in the north zone, and, finally, Bosque Maia, located in the municipality of Guarulhos, as important poles of attraction of São Paulo's nightlife. This research sought to capture comparative data involving operational performance (through retail indicators) of the retail units and area of influence, based on the distance of origin of the consumers. The study was based on the collection of data associated with specific characteristics of retail clusters, through information provided by customers and pub managers, a traditional procedure used in descriptive studies (Malhotra, 2011; Aaker; Kumar, & Day, 2007).

The object of study comprises 3 clusters, and for each cluster, 5 retail units were investigated, in which the questionnaire was applied, and for each retail unit, 10 customers were interviewed. The study was composed of a total of 15 retail units (pubs and restaurants), totaling 150 interviews applied to end consumers. Figure 2 shows the surveyed clusters regions.

Figure 2

Pub Retail Cluster Regions



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For the present study, the following information was collected: (1) results, performance, number of employees, total installed area, revenue, as a basis for the construction of indicators, with the managers and/or owners of the pubs; and (2) the consumers' place of origin, next to them. The data collection instrument was developed with the objective of identifying the area of influence, based on the collection of distance from the origin of the visitors. The data collection instrument was developed in order to analyze the area of influence, in an attempt to find out the distance traveled by consumers and regulars to the place (pubs).

In the aspects related to the performance of the pubs surveyed in the pub retail clusters, the data requested from the managers were basically average monthly revenue, number of employees and area of the establishment. These data provide the basis for the calculation of two consolidated indicators in the evaluation of the performance of retail units, in general:

→ Turnover / Number of Employees

→ Turnover / Property Area

In relation to the customers of the 5 pubs per selected region, 10 respondents were made by availability, verifying their place of origin. Figure 3 shows the structure of the instrument for each of the pubs, consisting of data from customers (final consumers) and pub managers for the 3 clusters investigated.

Figure 3

Data collection instrument

COMPANY # / PUB:	PHONE:
ADDRESS:	
CUSTOMER 01 - PLACE OF ORIGIN:	
CUSTOMER 02 - PLACE OF ORIGIN:	
CUSTOMER 03 - PLACE OF ORIGIN:	
CUSTOMER 04 - PLACE OF ORIGIN:	
CUSTOMER 05 - PLACE OF ORIGIN:	
CUSTOMER 06 - PLACE OF ORIGIN:	
CUSTOMER 07 - PLACE OF ORIGIN:	
CUSTOMER 08 - PLACE OF ORIGIN:	
CUSTOMER 09 - PLACE OF ORIGIN:	
CUSTOMER 10 - PLACE OF ORIGIN:	
COMMENTS:	
COMPANY DATA	
MANAGER:	AREA m^2 :
BILLING/ESTIMATION:	NUMBER OF EMPLOYEES:

Figure 4 shows the compilation of the data collection matrix, used as a basis for their treatment.

Figure 4

Data Collection Matrix

DATA BASE		AREA1	AREA2	AREA3	EMPLOY	INCOME	DIMPUB	INCAR	INCEM	INCARA	INCEMA	AREA1A	AREA2A	AREA3A
Survey Field	Company	RADIUS (A1) AREA INFL.PRIM.	RADIUS (A2) AREA INFL.SEC.	RADIUS (A3) AREA INFL.TERT.	NUMBER EMPLOYEE [----]	ESTIMATED REVENUE [R$]	PUB AREA [m2]	INDICATOR REV./AREA [R$/m2]	INDICATOR REV./EMPLOYEE [R$/m²]	INDICATOR REV./AREA [R$/m2]	INDICATOR REV./EMPLOYEE [R$/m²]	PRIMARY INFLUENCY AREA (AREA1)	SECONDARY INFLUENCY AREA (AREA2)	TERTIARY INFLUENCY AREA (AREA3)
VILA MADALENA	VM 1													
	VM 2													
	VM 3													
	VM 4													
	VM 5													
CAETANO ALVARES	CA 1													
	CA 2													
	CA 3													
	CA 4													
	CA 5													
BOSQUE MAIA	BM 1													
	BM 2													
	BM 3													
	BM 4													
	BM 5													

In summary, for this study, 3 clusters of pubs, represented by 15 units, will be compared, verifying the presence of statistically significant associations between performance indicators and markers of the area of influence for these retail concentrations. The data collected in the survey with consumers referred exclusively to the location of departure to the pub. The data obtained from the managers were limited to 3 variables: average revenue, area of the establishment and number of employees.

The ordering of the distances from the consumers, obtained from the starting address and location of the pub, indicated the values of the extension of the primary, secondary and tertiary areas of influence for pubs, unfolded for the clusters. The data obtained from the managers of the retail units surveyed offered access to the two performance markers of the pubs: Revenue/Area of the establishment and Revenue/Number of employees. Subsequently, the mean of these values for each cluster were admitted as performance indicators of pub concentrations.

The relationship between areas of influence of competing retail clusters potentially reflects the relationship of competitive capacity between these clusters. In this sense, the presence of associations between the dimensions of the primary, secondary and tertiary areas of influence and the respective indicators of performance of the units and clusters studied were explored. Thus, the existence of significant correlations between areas of influence and performance indicators was explored.

4 Results

Table 2 provides a compilation of the results for the research variables after processing the data obtained from the 15 retail units surveyed and from the 150 respondents in relation to their location of origin. Table 1 describes the variables involved.

Table 1

Description of the research variables

VARIABLES	DESCRIPTION
VM (1 a 5)	Retail units (pubs) in the Vila Madalena Region
CA (1 a 5)	Retail units (pubs) in the Rua Eng. Caetano Álvares
BM (1 a 5)	Retail units (pubs) in the Bosque Maia
AREA1	Primary catchment area of the retail unit
AREA2	Secondary catchment area of the retail unit
AREA3	Tertiary catchment area of the retail unit
EMPLOY	Number of retail unit employees
INCOME	Estimated retail unit revenue
DIMPUB	Retail unit area
INCAR	Retail unit revenue/area competitiveness indicator
INCEM	Revenue/employment competitiveness indicator. of the retail unit
INCARA	Revenue/area indicator of the retail agglomeration
INCEMA	Revenue indicator/number of employees in the retail agglomeration
AREA1A	Primary area of influence of the retail agglomeration
AREA2A	Secondary influence area of the retail agglomeration
AREA3A	Tertiary influence area of the retail agglomeration
MEDIA	Arithmetic mean of the data for the respective variable
D.PAD	Standard deviation of data for the respective variable
CV	Coefficient of variation of data for the respective variable

Table 2

Data Descriptive Statistics

DATA BASE	AREA1	AREA2	AREA3	EMPLOY	INCOME	DIMPUB	INCAR	INCEM	INCARA	INCEMA	AREA1A	AREA2A	AREA3A
Company	RADIUS (A1) AREA INFL.PRIM.	RADIUS (A2) AREA INFL.SEC.	RADIUS (A3) AREA INFL.TERT.	NUMBER EMPLOYEE [---]	ESTIMATED REVENUE [R$]	PUB AREA [m2]	INDICATOR REV./AREA [R$/m2]	INDICATOR REV./EMPLOYEE [R$/m²]	INDICATOR REV./AREA [R$/m2]	INDICATOR REV./EMPLOYEE [R$/m²]	PRIMARY INFLUENCY AREA (AREA1)	SECONDARY INFLUENCY AREA (AREA2)	TERTIARY INFLUENCY AREA (AREA3)
VM 1	11	25	28	22	450	200	2,3	20,5					
VM 2	5	6	10	12	250	120	2,1	20,8					
VM 3	6	13	21	16	130	100	1,3	8,1	1748,00	17862,11	8,3	15,2	19,1
VM 4	11	17	17	12	277	250	1,1	23,1					
VM 5	8	15	19	19	320	160	2,0	16,8					
CA 1	11	17	18	30	300	900	0,3	10,0					
CA 2	6	8	9	35	300	875	0,3	8,6					
CA 3	3	15	17	12	275	120	2,3	22,9	769,64	12152,26	6,2	12,3	13,8
CA 4	5	10	11	20	170	400	0,4	8,5					
CA 5	6	12	14	24,25	261	573,75	0,5	10,8					
BM 1	10	15	16	22	280	600	0,5	12,7					
BM 2	4	5	6	22	200	600	0,3	9,1					
BM 3	13	19	20	30	300	300	1,0	10,0	712,00	10919,19	10,2	13,7	18,0
BM 4	15	17	35	27	300	250	1,2	11,1					
BM 5	9	13	14	24	280	500	0,6	11,7					
MEDIA	**8,2**	**13,7**	**16,9**	**21,8**	**273**	**396,6**	**1,1**	**13,6**	**1076,55**	**13644,52**	**8,2**	**13,7**	**16,9**
D. PAD.	**3,5**	**5,1**	**7,2**	**6,7**	**70**	**257,6**	**0,7**	**5,4**	**475,37**	**3024,48**	**1,6**	**1,2**	**2,3**
CV	**0,4**	**0,4**	**0,4**	**0,3**	**0,3**	**0,6**	**0,7**	**0,4**	**0,4**	**0,2**	**0,2**	**0,1**	**0,1**

The main considerations in relation to the results of the descriptive analysis are:

a) Significant dispersion of data around the means for all primary data collected, as a function of VC values greater than 0.2;

b) Areas of Vila Madalena's retail units comparatively smaller than those of the other regions;

c) Competitiveness indicators of Vila Madalena's retail units are comparatively higher than those of the other regions.

4.1 Correlation analysis between variables

The investigation of associations between variables was developed through the construction of a cross-table, composed of Pearson's r values as a measure of the bivariate correlation between all variables, using the IBM SPSS® v.21 software. Pearson's correlation coefficient (r) is a measure of linear association between variables (Garson, 2009), and can be considered, with reservations, as a measure of dependence between variables (Gomes, 1990). Table 3 summarizes the results, showing in gray background the significant correlations for relevant associations between variables.

Table 3

Analysis of correlation between study variables

VARIABLES		AREA1	AREA2	AREA3	EMPLOY	INCOME	DIMPUB	INCAR	INCEM
Primary area of influence	AREA1	1							
Secondary influence area	AREA2	,641**	1						
Tertiary area of influence	AREA3	,608**	,804**	1					
Number of employees	EMPLOY	,353	-,066	-,062	1				
Estimated bar revenue	INCOME	**,541****	**,734****	**,511****	,087	1			
Establishment area	DIMPUB	,072	-,327	**-,424***	,697**	-,048	1		
Revenue/Area	INCAR	-,012	**,484****	**,495****	**-,658****	,467**	**-,806****	1	
Revenue / Number of Employees	INCEM	,050	**,498****	,336	**-,709****	,603**	**-,544****	,828**	1

**. The correlation is significant at the 0.01 level (2-tailed).

*. The correlation is significant at the 0.05 level (2-tailed).

As can be seen in the analysis of Table 2, it is possible to infer some relevant indications about the phenomenon studied, such as:

(1) a significant positive correlation between AREA1 and INCOME (rPEARSON = .541**), indicating that the larger the primary area of influence, the higher the revenue;

(2) a significant positive correlation between AREA2 and INCOME (rPEARSON = .739**), indicating that the larger the secondary area of influence, the higher the revenue;

(3) a significant positive correlation between AREA3 and INCOME (rPEARSON = .511**), indicating that the larger the tertiary area of influence, the higher the revenue;

(4) a significant negative correlation between AREA3 and DIMPUB (rPEARSON = -0.429**), indicating that the larger the tertiary area of influence, the smaller the bar area, contradicting at first the expectation of this relationship;

(5) a significant positive correlation between AREA2 and INCAR (rPEARSON = .473**), indicating that the larger the secondary area of influence, the higher the Revenue/Bar Area performance indicator;

(6) a significant positive correlation between AREA2 and INCEM (rPEARSON = .496**), indicating that the larger the secondary area of influence, the higher the performance indicator Revenue/No of bar employees;

(7) a significant positive correlation between AREA3 and INCAR (rPEARSON = .501**), indicating that the larger the tertiary area of influence, the higher the Revenue/Bar Area performance indicator;

(8) a significant negative correlation between EMPLOY and INCAR (rPEARSON = -0.658**), indicating that the greater the number of employees, the lower the performance indicator Revenue/Bar Area;

(9) a significant negative correlation between EMPLOY and INCEM (rPEARSON = -0.709**), indicating that the higher the number of employees, the lower the performance indicator Revenue/No of bar employees;

(10) a significant negative correlation between DIMPUB and INCAR (rPEARSON = -0.806**), indicating that the larger the bar area, the lower the Revenue/Bar Area performance indicator;

(11) a significant negative correlation between DIMPUB and INCEM (rPEARSON = -0.544**), indicating that the larger the bar area, the lower the performance indicator Revenue/No of bar employees.

According to the indications offered by the analysis conducted, acknowledging the limitations imposed by the size of the sample of bars and, particularly, by the samples per population (Vila Madalena, Engo. Caetano Álvares and Bosque Maia), the secondary area of influence is shown to be significantly correlated with revenue/area and revenue/number of employees, suggesting the support of the H1b hypothesis. The H1a hypothesis is not supported due to the absence of significant correlation with the performance indicators, while H1c, with reservations, can be admitted as partially supported.

4.2 Comparative analysis between bar agglomerations

The verification of the conditions of competitiveness, by means of the performance proxy, of the agglomerations studied (Vila Madalena, Av. I go. Caetano Álvares and Bosque Maia) and their relationship with their areas of influence were conditioned by the feasibility of differentiating between them. The size of the sample, limited by the possibility of access and availability of time, prevented a parametric approach to the data. Conditioned to this situation, a non-parametric approach was chosen and, therefore, the Kruskal-Wallis test, also known as

analysis of variance in one direction only. As a non-parametric method, the normal distribution of residuals is not an impediment. Considering equivalent distribution and scale for the groups, the null hypothesis is that the medians of the populations are the same and the alternative hypothesis is that at least the median of the population of one group is different from the median of the population of at least one other group (Garson, 2009). Table 4 presents the results for the primary, secondary and tertiary areas of influence (AREA1, AREA2 and AREA3, respectively) for the comparison between the bar populations of Vila Madalena (VM), Engo. Caetano Álvares (CA) and Bosque Maia (BM).

Table 4

Kruskal-Wallis test for areas of influence

Statistical test[a,b]

	AREA1A	AREA2A	AREA3A
Chi-square	1,182	4,961	6,767
DF	2	2	2
Asymp. Sig.	,554	,084	,034

a. Kruskal Wallis Test

b. Groupment Variable: AGGLOM

Based on the results of the technique, it can be admitted that, in relation to the tertiary area of influence (AREA3), the populations can be differentiated and, in this sense, statistically

AREA3AVM > AREA3ABM > AREA3ACA

Table 5 shows the results for the performance (or competitiveness) indicators, INCAR and INCEM, for the comparison between the populations of bars in Vila Madalena (VM), Engo. Caetano Álvares (CA) and Bosque Maia (BM).

Table 5

Kruskal-Wallis test for performance indicators

Statistical test[a,b]

	INCARA	INCEMA
Chi-square	16,229	10,671
DF	2	2
Asymp. Sig.	,000	,005

a. Kruskal Wallis Test

b. Groupment Variable: AGGLOM

From the results in Table 5, it can be assumed that, for the two performance indicators INCAR (revenue/area of the retail unit) and INCEM (revenue/number of employees of the retail unit), the populations can be differentiated and, therefore, statistically

INCARAVM > INCARACA > INCARABM

INCEMAVM > INCEMACA > INCEMABM

The indication – with important limitations based on the size of the samples per population (Vila Madalena, Eng. Caetano Álvares and Bosque Maia) – is that, although the Vila Madalena region has superior areas of tertiary influence, revenue/area and revenue/number of employees, the performance indicators of the regions of Eng. Caetano Álvares and Bosque Maia do not correspond to their areas of influence. In other words, due to the results of this analysis, the H2a and H2b hypotheses are not supported, while H2c can be considered partially supported, but with reservations.

5 Discussion

The main objective of the present study was focused on the feasibility of construction and the use of a metric as an indicator of competitiveness of commercial concentrations operating with correlated offers, characterized as retail clusters. Considering the scarcity and relevance of consistent indicators in the evaluation of the competitiveness of retail clusters and the suggestions proposed by Zaccarelli et al. (2008), the concept of area of influence was

adopted as a starting point, a consolidated metric in the evaluation of retail businesses. To evaluate the competitiveness of the bars and the clusters constituted by these bars, the most used indices were used as proxies to measure retail performance: revenue per employee (full-time or equivalent) and revenue per sales area (Levy & Weitz, 2000; Burns & Mason, 1998; Mcgoldrick, 1990).

Thus, this investigation aims to contribute to the advancement of knowledge regarding retail clusters, providing relevant information in the understanding of the phenomenon and for the management of units and agglomerations of these. Endowed with competitive viability over time and an offer option valued by the final consumer (Porter, 1998; Siqueira & Telles, 2012; Siqueira et al., 2015; Zacarelli et al., 2008), retail clusters, in particular, require indicators and/or markers to monitor and control their competitiveness over time. Thus, this study aimed to answer the following research question: Is it possible to establish a significant association between the competitiveness of retail clusters and their area of influence?

The results obtained by data analysis, particularly correlation analysis, lead to some interesting indications in theoretical and managerial terms, suggesting further studies and potential practices to be adopted. Among these indications, some stand out for their immediate developments, such as:

I. positive and significant association between secondary area of influence (AREA2) and bar performance for the three agglomerations studied (INCAR and INCEM);

II. positive and significant association between tertiary area of influence (AREA3) and bar performance for the three agglomerations studied, when considering the revenue/area indicator (INCAR);

III. negative and significant association between number of employees (EMPLOY) and bar performance for the three agglomerations studied (INCAR and INCEM);

IV. negative and significant association between bar area (DIMPUB) and bar performance for the three agglomerations studied (INCAR and INCEM).

In relation to indication (I), the dimension of the secondary area of influence, which congregates 90% of the patrons, apparently suggests an interesting marker in the dimensioning of the performance of bars because it has a positive, significant (p-value ≤ 0.01) and important (around 0.5) correlation. In this sense, this indicator potentially provides a basis for cross-

sectional comparisons with other bars and longitudinal comparisons in the monitoring of competitiveness over time.

Indication (II) can be considered aligned and concordant with indication (I) however, it refers to a condition of the tertiary area of influence as a performance marker conditioned to the revenue/area indicator of bars. However, the positive, significant (p-value ≤ 0.01) and important (around 0.5) correlation between these two variables can be used as an additional competitiveness parameter.

The negative and significant association between the number of employees and the performance of the bars for the three agglomerations studied (indication III) goes in the same direction as the indication (IV), between area and performance of the bars. Although, mathematically, the indications are consistent with each other due to the significant and positive correlation between the number of employees and the bar area, an explanation for this apparent paradox can be associated with the performance of bars with smaller area and number of employees. Most of the bars with these characteristics are located in the Vila Madalena region, suggesting the relevant effect of location, related to the bar's operating cluster, which is known to be competitive (Telles et al., 2011; Arten, 2013).

The results of the comparative analysis between the agglomerations of bars (Vila Madalena, Eng. Caetano Álvares and Bosque Maia), focused on the investigation of potential relationships between areas of influence and performance (as a proxy for competitiveness), with the exception of sample size, were developed using the Kruskal-Wallis test. Some of the inference's present relevant indications such as:

I. The cluster of bars in Vila Madalena has a larger tertiary area of influence in relation to the cluster of bars established in the Bosque Maia region, which, in turn, has a larger area of tertiary influence in relation to the cluster of bars located in Av. I go. Caetano Álvares;

II. The cluster of bars in Vila Madalena is more competitive (based on revenue/area and revenue/number of employees) than the cluster of bars established in the regions of Av. I go. Caetano Álvares, which, in turn, has a greater area of tertiary influence in relation to the bars located in Bosque Maia;

III. Although in an exploratory way the relationship between the largest tertiary area of influence for Vila Madalena can be associated with greater competitiveness, the same was not observed for the regions on Av. I go. Caetano Álvares and Bosque Maia, due to the different

ordering between them, when considering the indicators of tertiary area of influence and performance.

Considering the results, it is possible to establish a position in relation to the hypotheses adopted, relating area of influence, broken down into primary, secondary and tertiary, and competitiveness, with performance as a proxy variable, based on the metrics revenue/area and revenue/number of employees. Table 6 summarizes the results of the study.

Table 6

Study Results Summary

BASIC HYPOTHESIS	PROPOSITION	HYPOTHESIS	DESCRIPTION	RESULT
H1	The size of the area of influence has a positive association with competitiveness, assessed by the performance of bars in retail clusters	H1a	The size of the primary area of influence has a positive association with the performance of bars in retail clusters.	NOT SUPPORTED
		H1b	The size of the secondary influence area has a positive association with the performance of bars in retail clusters.	SUPPORTED
		H1c	The size of the tertiary area of influence has a positive association with the performance of bars in retail clusters.	PARTIALLY SUPPORTED
H2	The relationship between areas of influence of competing retail clusters, as measures of their performance, reflects the competitive capacity of these clusters	H2a	The relationship between the primary areas of influence of competing retail clusters reflects the comparative competitive capacity of these clusters.	NOT SUPPORTED
		H2b	The relationship between the secondary areas of influence of competing retail clusters reflects the comparative competitive capacity of these clusters.	NOT SUPPORTED
		H2c	The relationship between the tertiary areas of influence of competing retail clusters reflects the comparative competitive capacity of these clusters.	PARTIALLY SUPPORTED

6 Conclusion

The immediate purpose of the research was to investigate the ownership of the area of influence as an indicator of the competitiveness of commercial concentrations operating with correlated offers, characterized as retail clusters. The research question adopted was in line with the objective described, which is: is it possible to establish a significant association between the competitiveness of retail clusters and their area of influence? In relation to the objective, which can be recognized as theoretical and operationally relevant, it was concluded that the potential capacity of this metric, particularly the areas of secondary and tertiary influence, can be admitted a priori as performance markers (proxy of competitiveness) of retail clusters. In this sequence, the research question was answered affirmatively based on the quantitative results that refer to the presence of a positive and significant correlation between the areas of secondary

and tertiary influence (partially) with the indicators revenue/area and revenue/number of employees.

In addition, other indications associated with bars, such as individual retail units, were also relevant, such as: (1) positive and significant association between secondary and tertiary (partial) areas of influence with bar performance for the three agglomerations studied; and the unexpected (2) negative and significant association between the number of employees and the performance of the bars for the three agglomerations studied; and (3) negative and significant association between bar area (DIMPUB) and bar performance for the three agglomerations studied (INCAR and INCEM).

In summary, it was found that the perspective of using the concept of area of influence as a metric for evaluating competitiveness is presented as an alternative with potential capacity to contribute to the evaluation of the competitiveness of bars as individual retail units, and retail clusters as commercial concentrations with correlated retail offers.

6.1 Theoretical and managerial implications

From the inferences, resulting from the comparison between theoretical foundations and research results, two implications of a theoretical nature and two of a managerial nature can be unfolded from the research developed:

I- The concept of area of influence, closely related to the attractiveness of retail clusters (Telles et al., 2013), denotes the importance of the ability to attract end consumers, measured by displacement, as an essential characteristic for the competitiveness of these agglomerations;

II- Performance indicators for retail units suggest competence in the collective assessment of the competitiveness of centers concentrating correlated offers for end consumers;

III- The use of the secondary area of influence and tertiary area of influence metrics offers an apparently appropriate alternative for the comparative evaluation of the competitiveness of competing clusters; and

IV- The use of secondary and tertiary influence area metrics offers an apparently appropriate alternative for longitudinal monitoring (over time) of the evolution of cluster competitiveness.

6.2 Limitations of the research and suggestions for future studies

The quantitative research focused on companies (bars) located within three retail clusters in the city of São Paulo, in the state of São Paulo, restricting the generalization of their indications, without serious reservations. It should be recognized, as a presumption, the adequacy of the bar sample as qualified for estimates of the clusters. In the same sense, due to the size of the sample, the availability sampling (therefore, non-probabilistic) and the number of variables used, the external validity of the results cannot be assured.

It should also be considered that the interviewees' answers about the place of origin did not involve addresses (for privacy reasons), but were limited to the indication of the neighborhood of origin. Subsequently, by means of secondary references, distances were estimated. Thus, the values for the calculation of all areas of influence are based on this procedure. The survey of field data was carried out in a period limited to months, characterizing the research as cross-sectional. This aspect is another caveat to be noted. Initially, a longer period with potential returns was planned, which did not prove to be feasible during the field phase.

As suggestions for future studies, different and opportune paths are opened from this research, considering the implications presented. Among these alternatives, the following can be indicated: (1) Replication of the research with extension of the sampling in terms of bars and patrons (final consumers), offering greater depth and/or critical investigation of the results obtained; (2) Longitudinal study aimed at monitoring the competitiveness of retail clusters, using the metrics adopted in the study and, if possible, others, verifying convergence between them and their competence in describing the performance of the agglomeration; (3) Comparative evaluation of the evolution of the competitiveness of retail clusters and the retail units that compose them, studying the adherence between these two levels, based on the relevant areas of influence; and (4) Investigation of the relationship between attractiveness, area of influence and competitiveness of retail clusters, associated with the exercise of agglomeration governance and/or public development policies.

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