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ENTREPRENEURSHIP: LOGISTICS AND REGIONAL MAPPING REDUCE THE RISK OF INVESTMENTS AND PROMOTE THE DEVELOPMENT OF POLES OF COMPETITION AND VALUE GENERATION IN THE STATE OF SÃO PAULO, BRAZIL – LOCAL PRODUCTIVE SYSTEMS (LPS´S): FACTORIAL ANALYSIS AS A TOOL FOR THE STUDY OF LOCAL PRODUCTIVE GROUPINGS

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Abstract

This study aims at comparing, from different periods, the integration and the productive flexibility of some regions of the State of São Paulo, having in view better regionalization of local business logistics, and the design of productive cooperation network and regional strategic poles for development, through the historic-strategic course of entrepreneurship. Our investigation was chronological, selecting towns along the old axes of railway transport of the State of São Paulo, which were the first drivers of regional progress. We analyzed the towns factorially, through the study of the degree of municipal development during three successive decades – 1970s, 1980s, and 1990s – in order that we can designate the strategic direction that is derived from each town's dynamic evolution, forming poles of regional and entrepreneurial attraction. The agglomerations of businesses and institutions into clusters or local productive/innovative systems (LPS´s) have deserved the attention of economic literature since the pioneer works of Alfred Marshall on the English industrial districts at the end of the 19th century. With the seminal ideas of Marshall as basis, many other authors have studied the reasons behind the competitive success of this form of industrial and entrepreneurial organization. (Porter 1993, 1998; Amato Netto 2000; Cassiolato & Lastres 2001; Igliori, 2001; Suzigan et al 2002.)

Introduction

One of the more effective strategies that allow local businesses to compete with big businesses of national or global performance is to focus business in the service of specific segments of the regional market in which they are localized (Bassi, 2000)1. We can therefore analyze towns from their inclusion into a matrix of local competitiveness, in which one of the axes refers to the critical factors of success or failure of local strategies, and the horizontal axis verifies the tendencies of these same critical factors through time.

Local external economies are in the core of discussion about clusters, because they are the ones that determine the very existence of the agglomeration by providing reduced costs for agglomerated businesses. They are also called the Marshallian external economies, and include the advantages resulting from (1) the existence of a dense local market of specialized labor; (2) easy access to the suppliers of primary materials, components, specialized resources and services, and often, also machines and equipments; and (3) the greater local dissemination of specialized skills that allow rapid processes of learning, creativity and innovation.

However, adding to this the necessary form of organization and coordination of regional businesses in similar or related activities, which influence the formation and evolution of LPSs.

This can add to the external economies of the regions, which are the result of joint and deliberated actions of the local businesses and institutions, such as, for example, the buying of primary materials, the promotion of management capability and professional development resources, the creation of export consortiums, the contracting of specialized services, the institution of collective technological centers, and credit cooperatives. From this sum shall result a collective efficiency that, in principle, determines the sustainable advantage, the social support for local institutions, and the incentive for entrepreneurship.

Although the interest for business aggregation has grown considerably during the past few years, some of the important issues regarding the understanding of this trend have already been discussed in economic studies conducted since the past century, for example, studies about external economy, and the role of cooperativism in the economic performance of businesses and regions, as raised by Marshall (Igliori, 2001).

Several authors highlight different competitive advantages of these geographic and sectoral concentrations of companies, such as the creation of appropriate conditions for the presence of suppliers in the region, the availability and specialization of local labor, and access to primary materials (Porter 1993, 1998; Amato Netto 2000; Cassiolato and Lastres 2001; Igliori 2001; Suzigan et al 2002).

According to Igliori (2001) and Suzigan et al (2002), these advantages are characteristic of external economies described by Marshall. Moreover, Cassiolato and Lastres (2001) pointed out that the geographic concentrations of businesses facilitate organization, increasing their bargaining power with their suppliers (enabling them to change the structure of local governance), creating conditions for more investments in research and development for other markets, which in turn, create conditions for concerted actions. All this constitute one of the most important pillars for creating sustainable competitive advantages in geographic concentrations of businesses, as highlighted by Carvalho and Laurindo (2003).

Methods for identifying geographic concentrations of correlated companies

Determination of indicators for spatial economic concentration and specialization is an important tool for the study of clusters or local productive systems, since it allows verification of geographic distribution of production, identification of regional specializations, and the mapping of the dynamics of dislocation and the interaction of economic activities within local and regional levels. According to Haddad (1989), the most popular indicators are locational quotient (LQ), and the curve of localization, or the Lorenz curve. Locational quotient reveals the relative concentration of a particular industry in a town or region according to their involvement in the same industry in a defined space. This signifies that the higher the quotient observed, the more specialized the local production structure is of that region.

As contributors to the application of these indicators, many are the methods used today by researchers involved in questions related to geographic and sectoral concentrations of businesses, most of which are based on secondary sources of information.

One of the sources of data utilized by many Brazilian researchers is the Annual Record of Social Information (Relação Anual de Informações Sociais – RAIS), which provide highly detailed information regarding employment and the main economic activities within a town. According to Suzigan et al (2002), these data carry a degree of uniformity that allows a timely comparison of distribution of sectoral economic activities. In another study, however, Suzigan et al (2001), pointed out that while these data are based on primary sources of information, the data collected lacked homogeneity and verification of consistency, which could distort the results and thus raise other problems for further analysis.

Suzigan et al (2002) also warned that the locational quotient is not always applicable in cases when used in particular comparisons of towns and regions. For instance, a less industrialized region may show a high index of specialization simply due to the presence of one productive unit that is actually of modest dimensions. This problem is even aggravated if an indicator is created based on RAIS, and this unit of production shows a high degree of diversification not recorded by the registry. Another weakness of the index is the

difficulty in identifying some form of specialization in regions (or towns) that carry diverse industrial structures and elevated total employment.

Because of the apparent limitations observed in these current indicators, there is now a pressing need to identify new indicators or methods of analyses for collecting data.

Methodological procedures

This study compares and analyzes patterns. It deals with the definition of the pattern of municipal distribution from the mid-1970s (using 1975 as basis), and early 1980s (using 1980 as basis), toward the evaluation of occurred changes in these towns during this past twenty years, comparing the obtained factors with the recent analyses, referring to 1996 and 2000. This is since the politics of business productivity possesses high flexibility after time, and supposes an intense debureaucratization process, in such way that towns that have made a part of the program A, in short time, can be dislocated to programs B or C, for reasons of economic or structural changes, and even such that a set of towns with similar characteristics are altered and new sets are formed. Such groupings include cities of different geographic areas which, at one point, were fundamentally equal in purpose. And, from the level of local development, making it possible the formation of business networks, and studies of competitive matrices.

In the attempt to seek a common denominator for the various information included in the survey, or to encapsulate the observed characteristics into a complete indicator, we applied factorial analysis as our methodological guide, and we obtained the factors that allow the recording of the dynamics of environmental changes. We materialized our research from secondary data available from the towns of the State of São Paulo, with the view to design strategic clusters2 (Porter 1999, p. 211).

Due to the great disparity between the variables used in the area of performance of the towns, we verified that only one factorial analysis, with all the variables, could provide one solution of which factors are difficult to interpret, and thus make it difficult to serve business competitiveness. We thus suggest the formation of homogeneous groups of variables, drawing independent or orthogonal factors from each. We use the method of Principal Component Analysis (PCA), and the criteria of Varimax rotation to obtain the easily interpretable factors.

Factors with greater expression were considered in each group (with a maximum of two factors), reaching a total of nine factors, all of which are interpretable.

Factorial Analysis was applied to each of these groups, drawing a maximum of two factors. PCA method with Varimax rotation and matrix of correlation (standardized data) were used. A summary of this method, with the main results obtained, is presented in the following section.

Variable descriptions for the visualization of regional poles

The choice of variables used to carry out this mapping is based on secondary data, or tax payer records, provided by the following institutions: FIBGE, FSEADE, FUNDAP.

Chosen for this work were 126 towns in the State of São Paulo. The list can be found in Appendix A.1.

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Below follows the listing of the chosen variables for the analysis of each town in 1975, 1980, 1996, 2000
Table1

CNE	Creation of new jobs.
LEC	Commercial power connection.
LEI	Industrial power connection.
VPA	Value of agricultural production.
ICM	Tax reserve of the ICMS.
RCM	Municipal revenue.
SMR	Number of maintenance services companies.
CVE	Number of retail places of business.
CAT	Number of wholesale places of business.
CPA	Number of places of business with food.
CVP	Number of places of business with auto and autoparts.
NEI	Number of industrial places of business.
IPA	Number of places of business with food industry.
MTL	Number of places of business with metallurgical industry.
MEC	Number of places of business with mechanic industry.
ETM	Number of places of business with mine extraction and transformation.
ICV	Number of places of business with shoes and garment industry.
SLI	Salaries paid by an industry.
VPI	Value of industrial production.
VTI	Value of industrial transformation.
TRS	Total revenue with services.
TRC	Total revenue with commercial activities.
CQV	Business in chemical and pharmaceutical products.
POP	Population of town in 1,000 inhabitants.

In order to allow the comparability of variables between towns, we converted the same data (per resident, per 1,000 inhabitants or 10,000 inhabitants). These data were obtained from the following form:

(i) The variables CNE, LEC, LEI, VPA, ICM and RMC were converted into data for every 1,000 inhabitants, dividing the value of the same data by town population (in 1,000 inhabitants). These data were denoted preceding the variables by the letter "T."

(ii) The variables SMR, CVE, CPA, CAT, CVP, IPA, NEI, MTL, ETM, ICV, CQV and ME were converted into data for every 10,000 inhabitants, dividing the value of the same data by the town population (data for 1,000 inhabitants), and multiplying the obtained value by 10. We use a similar notation in (i).

(iii) Lastly, the variables SLI, VPI, VTI, TRS and TRC were converted into data for every resident, dividing the value of the same data by the town population. We use a similar notation in (i).

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In order to avoid deviating values (extreme points) from excessively influencing the matrix of correlation, and in consequence, distorting the final results, a discrete analysis was carried out in order to omit, in each case, those towns that present such values in some of the applied variables. We adopted the following criteria: omit from the analyses those towns with average values above or below 3 deviating patterns. Subsequently, for each factor, these towns have their scores estimated.

The following group of variables was formed for the analyses
Table2

GROUP I	To denote municipal growth or decline. Variables used: TCNE, TLEC, TLEI, TSMR, and TIRS.
GROUP II	To denote characteristics of one town according to its region. Variables used: TVPA, TICM, TRMC, and TCQV.
GROUP III	To denote concentration of traditional fields of economy. Variables used: TICV, TCPA, TIPA, TCVE, and TEIM.
GROUP IV	To denote commercial and industrial growth or decline. Variables used: TMIL, TMEC, TCAT, TCVP, and TTRC.
GROUP V	To denote intensity of industrialization. Variables used: TSLI, TVPI, TVTI, and TNEI.

Factorial analysis for the mapping of the state of Sao Paulo through the sustainability of its towns.

For every group defined in the previous section, we denote X_j with j^{th} standardized data. Given that every component X_j is generated as a linear combination of q factors neither correlated nor observable (let $q=2$), and plus one error, i.e.,

$$\begin{aligned} X &= \lambda_{11} f_1 + \ldots + \lambda_{1q} f_q + e_1 \\ &\vdots \\ X &= \lambda_{p1} f_1 + \ldots + \lambda_{pq} f_q + e_p \quad (p<q) \end{aligned} \qquad \text{(I)}$$

$f_{1,}\cdots, f_q$ are common factors,

$e_1,\ldots,e_p$ specific factors or errors,

λ_{jk} is called "loading" of j^{th} result in the k^{th} common factor.

Given that:

$E_f = 0, E_e = 0, Var(f) = I_q$

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and $Var(e) = \psi = diag\{\psi_{1,}\ldots,\psi_p\}$,

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where ψ_j is called specific variance, and, e e f are not correlated.

Notes:

(i) $\text{Cov}(X_j, f_k) = \lambda_{jk}$,

(ii) $\text{Cov}(X_j, X_{j'}) = \lambda_{j1}\lambda_{j'1} + ... + \lambda_{jp}\lambda_{j'p}$,

(iii) $\sigma^{2}_{jj} = \text{Var}(X_j) = \lambda^2_{j1} + ... + \lambda^2_{jp} + \lambda^2_j$,

(iv) $\sigma_{jj} - \psi^2_j = \lambda^2_{j1} + ... = \lambda^2_{jp}$ is called commonality of the result *j*.

To estimate $\Lambda = \{\lambda_{jk}\}$ e ψ, we apply the PCA method. This method is called the solution of the principal factor and equals the λ_{jk}´s to the loadings of the q principal factors, while the ψ_j´s are estimated through the loadings of the *p-q* remainder factors.

Just as the factors in (1) are not singular, we use the criterion of Varimax rotation, obtaining factors that have large loadings to some variables and small to others.

The importance of the factors in the towns were measured through the scores of the factors, estimating the vector of parameters B in the expression below.

$$\underset{\sim}{f} = \underset{\sim}{X}\underset{\sim}{B} + \underset{\sim}{e} \qquad \text{(II)}$$

Not knowing the values observed for f, it is possible to estimate B, similarly also with the linear regression, thus there are estimated covariance between f and X, and of the matrix of covariance of X. Thus we have,

$$\hat{B}_T = \hat{\Lambda}^T (\hat{\Lambda}\hat{\Lambda}^T + \hat{\psi})^{-1}, \qquad \text{(III)}$$

And the importance of the k^{th} factor in the l^{th} town are estimated through:

$$\hat{\text{f}} = \sum_{j=1}^{P} x_{lj} B_j \qquad \text{(IV)}$$

where x_{lj} is the standard value of the j^{th} data in the l^{th} town, thus obtaining the following factorial results:

There was a maximum of two factors drawn from each group of variables (which, in general, gave the expression approximately 70% of the total variance of the factors) obtaining the following results for 1975, 1980, that are presented in Appendices A.2 and A.3, respectively, and for 1996 and 2000, such as interpreted.

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Table3

Group 1	Factor 1 Municipal revenue in the service sector.
	Factor 2 Creation of local businesses.
Group 2	Factor 3 Level of municipal revenues, and tax revenue of ICMS.
	Factor 4 Level of town agricultural production.
Group 3	Factor 5 Degree of development of local retail commerce.
	Factor 6 Degree of development of garment, shoes, and food industries.
Group 4	Factor 7 Degree of development of the wholesale sector as for total commercial
	Factor 8 Degree of development of local mechanic and metallurgical industry.
Group 5	Factor 9 Index of global industrialization.

The importance of the factors in the towns was measured through the estimated factorial scores, being the quantities used in the creation of town groupings. Diverse sets of groupings were formed, some were obtained from individual factors, while others, from pairs of factors with set performance in the same town sectors. For each year, was also obtained the mapping of the State of São Paulo according to all factors. For the formation of these sets of groupings, we applied the method of k-mean clusters.

It is worthwhile to stress that in this study, the factorial scores used in the formation of the groupings are computed in the same scale, without influencing any factor, thus, it is not our objective to quantify the "actual" importance of each factor in the towns, but instead, to group the latter depending on the closeness of their factorial scores, which serve as good indicators of the situation of the towns in the State of São Paulo. Therefore, any differentiated derivation influential to the weight of the factors, and in consequence to the factorial scores, will make the study less informative with the groupings then being determined by factors of the greatest weight, prejudicing in this way, the formation of similar groupings according to other equally important factors, seeing that they represent variables of relevance in the business proposal of the creation of regional and strategic productive poles.

Apart from this, if there is little knowledge regarding the criteria of deliberation, and any one that were adopted, could lead the results according to the interests of the researcher.

Finally, we observe that some of the mappings were obtained according to the individual factors, therefore the groupings formed in these cases remain unaltered with the attribute of differentiated weights to the factors, since we only changed the scale of factorial scores.

Formation of descriptive groupings of agglomerated regions

Using the method of k-mean clusters, we seek, through the factorial scores, to create new mappings of the State of São Paulo, each one with ten homogenous groupings for the years 1975 and 1980, 1996 and 2000, for these give values for the testing of the difference with measures that are highly significant. The principal objective is to base these groupings, breaking away, for the effect of analysis, from the actual administrative areas of the State of São Paulo, whose actual divisions are also defined by its geographic features.

These groupings indicate that, in similar towns, it is possible to propose similar programs of sustainable development, aiding in the development of differentiated regional clusters,3 but which constitute profiles of complementary competence.

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These groupings were formed according to specific factors, group of factors with similar performance in the same sector of the towns, and all the simultaneous factors. However, it is necessary to emphasize the fact that two towns appearing in the same grouping does not signify that their characteristics are identical, and that the solution to their problems are the same.

The mappings obtained are presented in the Appendices A.1 to A.3. The following are some results and partial conclusions.

Considering altogether the nine factors, ten groupings were obtained for the State of São Paulo, for the years 1975 and 1980. Next, we present the main characteristics of each grouping, while Appendices A.2 and A.3 show the regional clusters designated by the cluster factors encountered for 1996 and 2000 as interpreted by the researcher, designating extensive development of service-providing areas within the 200- to 250-km radius around Greater São Paulo, and the concentration of poles of high technology along the Vale do Paraíba, Campinas and São arlos, of a scattered but important agricultural area, and still emerging logistic poles.

Table 1 - 1975 – The towns of each grouping are enumerated in Appendix A.2.

Grouping 1:	Rates of creation of new employment dependent of industrial activity and strongly specialized in the retail sector, low concentration of repair services.
Grouping 2:	Predominantly agricultural town with developing traditional industries, but few generators of employment, and retail and wholesale sector well below the average of rising industries.
Grouping 3:	High rate of employment creation resulting from strong development in the wholesale sector, demonstrating the importance of local regional links
Grouping 4:	Low rate of employment creation, a declining tax revenue, high rates of agricultural production, absence of industrialization, and still traditional.
Grouping 5:	Tourist region – where high rates of creation of new employment come with specialized activities.
Grouping 6:	Homogenous areas, characterized by recent development, geared toward the survival in the scope of local retail activities, but without specialized functions in the regional scope.
Grouping 7:	Areas in decline in the service sector, and of little expansion in the retail business – without industrialization of complementary bearing.
Grouping 8:	Rich towns and strongly industrialized, with dynamic industries and rich in municipal reserve.
Grouping 9:	Towns with elevated indices of activities and commercial warehouses, which indicate high importance of regional activities, with medium and diverse levels of industrialization.
Grouping 10:	Areas of small municipal revenues and indices below State standards with relative tendency for impoverishment.

Table 2 - 1980 - The towns of each grouping are enumerated in Appendix A.3.

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Grouping 1:	Economically stable area, with low population density, without local diversification.
Grouping 2:	Towns with low returns of municipal revenues and ICMS – dependent of specialized secondary activities, few business diversification, production predominantly agricultural, and industrially specialized and not highly diversified.
Grouping 3:	Areas of recent development with pronounced commercial activities and expansion for power to face the demand of a growing population, with priority for commercial warehouses and industries of traditional fields.
Grouping 4:	Area of almost full employment, thanks to the highly developed retail sector, regional poles of buying and consumption, small industrialization.
Grouping 5:	Good level of employment – resulting from areas of dynamic industrialization, without which this generates local or regional development, with small number of traditional industries and a decline in agricultural production.
Grouping 6:	Areas strongly lacking of industrial businesses of traditional sectors, and of commercial activities for wholesale and distribution with average indices of non-diversified industrialization, but of whose stable population lives according to the average standards of the State.
Grouping 7:	Areas of high income in revenues from tributes, industrialization not diversified, low commercial activity, lack employment.
Grouping 8:	Areas underdeveloped, lack local employment, small development of retail and wholesale businesses and traditional industries.
Grouping 9:	Areas with municipal revenue below average, with average traditional industries, and dynamic industries below average, with a stable level of employment.
Grouping 10:	Towns that pass regional importance, areas with municipal revenue that is above average, locally diversified industrialization, and a recently developed commercial area.

Through past data, we position the towns between the period 1975 and 1980 in different groupings, see Attachments A1, A2 and A3. Having as examples these regional formations, we can affirm that if this were stimulated by entrepreneurship during the period, many towns and regions would not have declined, thus already possessing indicative strengths of local competence, however, there were no incentives to the production of poles, local productive systems or the same for the beginning of incubators of local businesses of technology in the period, with this, we come to a new mapping referring to the period 1996-2000.

There remains a lot to do in order to save traditional industries.

We hope that our vision regarding these clusters may help in their competitive strategy, designating solutions with better regional strategic visibility, for the development of four strategic poles in the State of São Paulo, to know: (1) Greater São Paulo and its periphery of up to 250-km perimeter; (2) poles of high technology; (3) agricultural poles; and (4) commercial and logistic development poles.

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The first pole characterized by the growth of the service sector, and the decline of industrial activity, with the reflections of globalization of the last decade, which scrapped the less competitive industrial park existent in the metropolitan region, and turned the mega-agglomerated urban regions of emerging countries into service economies. Our research observed a service-oriented pole in the 250-km radius of the capital of São Paulo, a global city.

The second pole, high technology, such as found in São Carlos, in the interior region, and São José dos Campos and other towns in the axis of the Dutra highway, which connects São Paulo with Rio de Janeiro, characterizes a more globalized industry, and is inclined toward exportation, having excluded many local partners. This is the case with Embraer which possesses American and Chinese partners.

The third pole, agriculture, has suffered great changes, being scattered thinly throughout the different regions of the State of São Paulo.

Table 3 - Value of Agricultural Production for the Administrative Region of the State of São Paulo – 2001

AR	Production Cost (R$)	%
Campinas	3.302.391.485,05	19,03
Sorocaba	2.120.734.791,72	12,22
S.J.Rio Preto	1.844.523.263,33	10,63
Central (Araraquara)	1.547.334.742,46	8,92
Marília	1.444.155.837,87	8,32
Araçatuba	1.194.981.866,76	6,89
Bauru	1.161.204.840,63	6,69
Franca	1.089.139.449,60	6,28
Ribeirão Preto	1.054.272.709,95	6,08
Presidente Prudente	959.478.588,40	5,53
Barretos	996.032.270,82	5,74
S.José dos Campos	214.988.268,44	1,24
Registro	210.325.433,40	1,21
São Paulo	186.776.507,27	1,07
Baixada Santista	26.884.665,99	0,15
Total	17.353.224.721,69	100

(Source: IEA/APTA/SAA-SP)

This pole demonstrates that the agri-business gave strategic sustainability to the various regions of the State, when it was more dispersed and impoverished, but entrepreneurship became vital for its expansion.

The fourth pole is logistic. The main incentives that bring a business to participate a cluster are gains in scale. Partnership allows the acquisition of new technologies, and also opens doors for exportation, which demands a greater volume of production. Piracicaba, for example, is a logistic pole. With the industry manufacturing heavy equipments and railway machines, it exports to 130 countries, stimulates other processes of complementing industries and distribution, and allows the construction of a logistic pole.

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The same occurs in Botucatu, where the industry of production of agricultural aircraft for the spraying of rice, soya, and cotton, creates a rising commercial process, and generator employment, equally, in the region of Marília with the manufacture of ground spraying machines. These regions are natural logistic areas of agri-business.

A large logistic pole is formed in the ABC region of São Paulo, given the proximity of the region to the different ports, air routes, highways, and railways.

The evolution-mapping 1996/2000

For every group of variable, a maximum of two factors were extracted, which in general, give an explanation of 70% of total variance.

Table7

GROUPINGS		1996 MAPPING	2000 MAPPING
1/10	Area of strong agricultural predominance.	Barretos, S.J. do Rio Preto Vista, Araçatuba, Sorocaba, Marilia.	S.J. do Rio Preto, Araçatuba, Marilia, Sorocaba, Cândido Mota.
2/10	Good employment level resulting from dynamic industrialization.	São Carlos, Santa Bárbara, Porto Ferreira.	Santa Bárbara, Rio Claro, Porto Ferreira.
3/10	Area of stable population, with predominant commercial activities. Possible logistic poles of agribusiness.	São José do Rio Preto, Itapetininga.	Botucatu, Assis, Mogi-Mirim, Itapetininga.
4/10	Areas in decline, without industrialization of any scale, and little commercial activities.	Apiai, Salto, Itapeva, Ribeirão Bonito.	São Roque, São Simão.
5/10	Areas of recent development, without specialized functions of regional level.	Itapetininga, Tupã, Marilia.	Bebedouro, Lençóis Paulista, Presidente Prudente, Jaboticabal.
6/10	Areas of below average level in municipal reserve, but a stable level of employment.	Assis, Bebedouro, Itapeva, Lençóis Paulista, Ribeira.	Jaú, Aguas da Prata, Cabreúva.
7/10	Areas of diversified industrialization, high reserve of tributes, and lack of employment. Possible logistic poles of traditional industries.	Mogi-Guaçu, Rio Claro.	Birigui, Bauru, Franca, Ribeirão Preto.
8/10	Areas of small municipal reserve and a relative tendency for poverty.	Andradina, Atibaia.	Andradina, Ribeira.
9/10	Commercial area recently developed with a traditional industry. Possible logistic poles.	Presidente Prudente, Ribeirão Preto, Bauru, Itu, São Simão.	Lins, Itu, Novo Horizonte, Descalvado, São Simão.
10/10	Areas in expansion within the service sector. Logistic poles in services.	Americana, Jundiai, Piracicaba, metropolitan area of São Paulo	Americana, São Carlos, Jundiai, Atibaia, metropolitan area of São Paulo

**** Other towns selected do not change its relative position.***

The organization of businesses into productive systems constitutes an important source of lasting competitive advantages, especially when these are constructed from local productive capacities and innovators.

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Productive systems are agglomerations of localized businesses within the same territory, which present productive specializations, and maintain links of articulation, interaction, cooperation, and understanding among itself, and with the other local actors such as the government, business associations, credit institutions, education and research. A Local Productive System is characterized by the existence of the agglomeration of a significant number of businesses that engage in a principal productive activity. For this, it is necessary to consider the dynamics of the territory in which these businesses are embedded, having in view the number of work posts, turnover, market, growth potential, diversification, among other aspects. Suzigan et al (2002) developed a new approach in studying local groupings using the concept of local production system. From this approach, such groupings show varied characteristics, according to history, institutional organization, socio-cultural aspects, productive structure, industrial organization, structure of governance, logistics, level of local association and cooperation, forms of training, and the degree of dissemination of local training.

Other authors define these groupings oftentimes according to the nature and breadth of their studies. An example of this is the definition given by Zaccarelli, who conducts his strategic studies of groupings using the cluster method, defining them as a strong and consolidated framework of competitive factors based on the "diamond model" proposed by Porter (1993), which according to Zaccarelli (1995) allows the understanding of competitive gain of this type of business groupings.

According to Porter (1998), clusters are geographic concentrations of businesses and institutions related to a particular sector of local economic activity, which through an interactive process translates into a capacity of innovation and specialized knowledge, which in turn create local competitive advantage. Based on the economy of businesses approach adopted by Porter, these groupings, as results of a set of market forces, carry a relevant role in the economic development of countries, which demonstrate competitiveness in today's global economy.

For this, the notion of territory is fundamental for the realization of Local Productive Systems. However, the idea of territory cannot be summed up only by its material or concrete dimension. Territory is a field of forces, and a web or network of social relations that project itself into a determined space. The following table illustrates this.

Sector	Towns or Localities
Jeweller (Jeweller and Polishing of semi-precious stones, jewelries)	Limeira and São José do Rio Preto
Garments	Tabatinga, Ibitinga, Conchas, Cerquilho
Wood and Furnishings (Furniture)	Mirassol
Construction (Red Ceramic)	Vargem Grande do Sul
Shoes (Feminine shoes)	Jaú
Shoes (Masculine shoes)	Franca
Shoes (Infant shoes)	Birigui
Automotive (Autoparts/Plastic)	Santo André
Wood and Furnishings (Wooden Furniture)	São Bernardo do Campos
Petroleum and Gas	Paulínia

The textile pole of Americana is considered the biggest nucleus of production of artificial and synthetic textiles in the country, responsible for 85% of the national production of more than 130 million linear meters per year. In spite of this great potential, the volume of garment products does not reach 1% of the total textile load of the region, according to the data from the Center of Industries of the State of São Paulo (CIESP) of Americana. Another example of redirection is Americana, where the complex textile-

garment industry significantly changed its technological profile, after having met a hard loss from foreign goods (especially Chinese). Today Americana characterize for more being typically of logistic support.

The last two decades, for known reasons, brought the economy strong oscillations, and affected the strategy of companies and sectoral groups and regional poles. This significantly changed the position of the groupings of towns that we had in 1975 and 1980, but did not significantly affect the majority of the towns, thus the growth of the State of São Paulo in the last decade was less than expected. Only protagonist entrepreneurship can change the model, designing new productive systems.

Amato Neto (2000) highlighted the leather-and-shoe pole of Franca, Birigui and Jaú, which, in our analysis referring to 1975-1980, used to be in different clusters, and were comparatively less defined than other towns or regions. Since 1984, due to small-devaluations in exchange rates, these towns became garment export poles, and in spite of little investments, a greater part of them in electronic equipments, the sector saw the average price of its products increase in the international market. While unable to compete with the more expensive Italian shoes, Brazil produces better quality than the Asians. Franca specialized in masculine leather shoes, Birigui in synthetic infant shoes, and Jaú in feminine leather shoes. These towns possess a strong relationship of cooperation among companies.

Today, you can already say this in the textile pole in Jundiaí, Americana, Araraquara, São José dos Campos, Sorocaba and Itapetininga. Other poles cited by Amaro Neto include ceramics in some regions of Greater São Paulo, Porto Ferreira and Itú. Since 1982, the ceramic capital of Porto Ferreira no longer produce dishware, but produce instead ceramic floorings, redirecting its businesses to finishing materials for civil construction. Tambaú, Cordeirópolis came highlighted together with Santa Gertrudes.

The data discussed so far, show enough consistency to prove the strategic importance of the service sectors in the State of Sao Paulo, where there exists a great concentration such sectors in areas close to the capital and to the large industrial centers. A greater part of the State's population is concentrated in these areas, showing the greatest part of the population economically involved, directly or indirectly, in the service sector. Of the ten groups mapped out in Table 10, four groups, aggregating one-third of the population of the State of Sao Paulo, exhibit strong features typical of service sectors.

Finally, it is worthwhile to emphasize that the information obtained through this factorial analysis demonstrate a close relationship with the results obtained using secondary sources of information for Locational Coefficient analysis. The values of the locational quotient for those towns where factorial analysis detected predominance of service-related activities were greater than 1.0 in 95% of the cases, showing that such an activity presents a significant degree of specialization and concentration in the town or region studied.

Final conclusions

This study reveals that differentiated entrepreneurial politics should be proposed to the businesses of the State of São Paulo, in order to minimize their strategic risks, and better their competitive matrix in the local level. The study exposes that the various recessive crises of the 1980s and the 1990s hindered the integrated development of the regional poles of the State; the birth of efficient logistic allows the geographic regions the formation of a support network; logistic clusters are a key factor for the stimulation of business, and transcend the administrative regions, and can be created by institutional stimuli.

The preoccupation of competitiveness leads to the reevaluation of strategies for the State of São Paulo, which lost dynamism in the last few decades, and which could be a great commercial and logistic pole in the next five years through political means, and public and private strategies, if private initiatives were stimulated through local networks. The mapping should be made regularly, to serve as an indicator of strategic positions, and to designate strategic logistic areas, as well as the evolution of local service sectors.

Notes

1. See Igliori (2001).
2. The matrix of competitiveness leads us to consider the evolution of the towns of the State of São Paulo through almost 30 years, as well as to examine the critical factors of local development. Bassi (2000).

3. Porter, M.E. Competição (Michael E. Porter on Competition). RJ: Ed. Campus, 1999. An agglomeration is a grouping of interrelated companies and correlated institutions geographically concentrated in a determined area, linked by common and complementary elements.
4. One of the more efficient strategies for which local companies could compete with big businesses of national or global performance, is to focus on trade in the service of specific segments of regional market in which they are localized. (Bassi, 2000) We can, therefore, analyze towns from their positions within a matrix of local competitiveness in which one of the axes refers to the critical factors of success or failure of trade strategies, and the horizontal axis verifies the tendencies of these same critical factors through a length of time.
5. The proposal of the study is principally, to analyze the forms of auto-eco-organization, which E. Morin proposed to us in order to surpass determinisms in a concrete space-time.
6. The four strategic poles detected through the research of clusters can already serve as glimpses in the public work by SEBRAE-SP in 1994, as authored by S.A. Santos, H.J. Pereira, and S.E. França, "Cooperation between micro e small companies" (Cooperação entre micro e pequenas empresas). Apart from this, the analysis of the investment profiles of the State of São Paulo designates Vale do Paraíba with approximately 35% of capital invested in the State, the region of Campinas with 27%, Greater São Paulo with 11%, and the rest distributed through the territory of São Paulo, denoting movement of resources in the pole of high technology, in the Vale do Paraíba, more investments in the service sector characteristic of Greater São Paulo and the region of Campinas, and the rest much varied between commercial and storage activities, being the agri-business generator of resources in the State, and presenting the growth of the last decade, responsible for the rise of many São Paulo towns, but still dispersed.
7. Commercial and logistic activities are still not well defined in the State of São Paulo, and are a good opportunity for the construction of local networks. Logistics is a new order of things, of vital strategic importance, having the importance of global regional and local scale, with more specialized commercial functions.

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Appendix A.1. Regions Selected Through the Researcher's Criteria.

1st Region – strongly attracted by the capital of the State.
1.Itu, 2.Jundiaí, 3.Sorocaba, 4.Atibaia, 5.Itapetininga, 6.Porto Feliz, 7.Bragança Paulista, 8.Campinas, 9.Piracicaba, 10.São Roque, 11.Tietê, 12.Piracaia, 13.Cabreúva, 14.Indaiatuba, 15.Santa Bárbara, 16.São Pedro, 17.Salto, 18.Rio das Pedras, 19.Laranjal, 20.Americana.
2nd Region – formed within the axis served by the old Mogiana de Estradas de Ferro Company.21.Mogi-Mirim, 22.Franca, 23.Lindóia, 24.Batatais, 25.Casa Branca, 26.Amparo, 27.Itapira, 28.S.João da Boa Vista, 29.Serra Negra, 30.São Simão, 31.Cajuru, 32.Socorro, 33.Ribeirão Preto, 34.Mococa, 35.Igarapava, 36.Patrocínio Paulista, 37.Mogi-Guaçu, 38.Ituverava, 39.S.J. do Rio Preto, 40.Sertãozinho, 41.Cravinhos, 42.Orlândia, 43.S.Joaquim da Barra, 44.Morro Agudo, 45.Serra Azul, 46.Águas da Prata, 47.Pontal.
3rd Region – covered by the old Paulista de Estrada de Ferro (Baixa Paulista) Company and S. Paulo Goiás
48.Araraquara, 49.Limeira, 50.Rio Claro, 51.São Carlos, 52.Descalvado, 53.Pirassununga, 54.Jaboticabal, 55.Araras, 56.Barretos, 57.Santa Rita, 58.Bebedouro, 59.Porto Ferreira, 60.Monte Azul, 61.Guairá, 62.Itirapina.
4th Region – covered by the elongation of the old Paulista Company and by the Estrada de Ferro Araraquara.
63.Brotas, 64.Jaú, 65.Dois Córregos, 66.Ribeirão Bonito, 67.Ibitinga, 68.Bariri, 69.Itápolis, 70.Bocaina, 71.Pederneiras, 72.Taquaritinga, 73.Nova Europa, 74.Dourado, 75.Boa Esperança, 76.Matão, 77.Barra Bonita, 78.Santa Adélia, 79.Catanduva, 80.Novo Horizonte, 81.Mirassol, 82.Pindorama.
5th Region – formed by the developing towns along the old E.F.Noroeste do Brasil and Alta Paulista.
83.Bauru, 84.Piratininga, 85.Penápolis, 86.Pirajuí, 87.Lins, 88.Avaí, 89.Araçatuba, 90.Birigui, 91.Promissão, 92.Avanhandava, 93.Cafelândia, 94.Garça, 95.Marília, 96.Andradina, 97.Tupã, 98.Pereira Barreto.
6th Region – formed along the old Estrada de Ferro Sorocabana.
99.Botucatu, 100.Lençóis, 101.Avaré, 102.Santa Cruz do Rio Pardo, 103.Bofete, 104.Piraju, 105.São Manoel, 106.Itatinga, 107.S.Pedro do Turvo, 108.Agudos, 109.Salto Grande, 110.Assis, 111.Cerqueira César, 112.Ourinhos, 113.Palmital, 114.Presidente Prudente, 115.Chavantes, 116.Cândido Mota, 117 .Presidente Venceslau, 118.Regente Feijó.
7th Region – formed along the branch of Itararé of the old Estrada de Ferro Sorocabana.
119.Itapeva, 120.Capão Bonito, 121.Itaporanga, 122.Iporanga, 123.S. Miguel Arcanjo, 124.Itararé, 125.Ribeira, 126.Apiaí.

Appendix A.2 Mapping – 1975, According to all the Factors, using the Varimax Rotation.

1/10: 23.Lindóia.
2/10: 18.Rio das Pedras.

3/10: 58.Bebedouro, 100.Lençóis.
4/10: 38.Ituverava, 44.Morro Agudo, 47.Pontal, 60.Monte Azul, 66.Ribeirão Preto, 69.Itápolis, 73.Nova Europa, 74.Dourado, 78.Santa Adélia, 93.Cafelândia, 6.Porto Feliz, 35.Igarapava, 71.Pederneiras, 72.Taquaritinga, 54.Jaboticabal.
5/10: 29.Serra Negra.
6/10: 19.Laranjal, 27. Itapira, 34. Mococa, 45.Serra Azul, 52.Descalvado, 65.Dois Córregos, 80.Novo Horizonte, 82.Pindorama,118.Regente Feijó, 120.Capão Bonito, 121.Itaporanga, 122.Iporanga, 4.Atibaia, 5.Itapetininga, 46.Águas da Prata, 84.Piratininga, 70.Bocaina, 21.Mogi-Mirim, 92.Avanhandava, 7.Bragança Paulista,16.São Pedro.
7/10: 10.São Roque, 12.Piracaia, 13.Cabreúva, 25.Casa Branca, 30.São Simão, 36.Patrocínio Paulista, 39.S.J. do Rio Preto, 75.Boa Esperança, 88.Avaí, 91.Promissão, 96.Andradina, 98.Pereira Barreto, 103.Bofete, 106.Itatinga, 107.S.Pedro do Turvo, 109.Salto Grande, 108.Agudos, 113.Palmital, 115.Chavantes, 116.Cândido Mota, 119.Itapeva, 123.S. Miguel Arcanjo, 125.Ribeira, 126.Apiaí.
8/10: 15.Santa Bárbara, 17.Salto, 20.Americana, 37.Mogi-Guaçu, 40.Sertãozinho, 49.Limeira, 55.Araras, 76.Matão, 2.Jundiaí, 14.Indaiatuba, 9.Piracicaba.
9/10: 8.Campinas, 11.Tietê, 28.S.João da Boa Vista, 33.Ribeirão Preto, 42.Orlândia, 48.Araraquara, 1.Itu, 59.Porto Ferreira, 64.Jaú, 68.Bariri, 79.Catanduva, 83.Bauru, 95.Marília, 112.Ourinhos, 114.Presidente Prudente, 81.Mirassol, 51.São Carlos, 22.Franca, 26.Amparo, 90.Birigui, 77.Barra Bonita, 3.Sorocaba, 50.Rio Claro.
10/10: 24.Batatais, 31.Cajuru, 41.Cravinhos, 43.S.Joaquim da Barra, 56.Barretos, 61.Guaíra, 62.Itirapina, 63.Brotas, 67.Ibitinga, 85.Penápolis, 86.Pirajuí, 89.Araçatuba, 94.Garça, 105.São Manoel, 110.Assis, 111.Cerqueira César, 102.Santa Cruz do Rio Pardo, 53.Pirassununga, 104.Piraju, 57.Santa Rita, 117.Presidente Venceslau, 124.Itararé, 99.Botucatu, 97.Tupã, 101.Avaré, 32.Socorro, 87.Lins.

Appendix A.3 Mapping – 1980, According to all the Factors using the Varimax Rotation.
1/10: 27.Itapira.
2/10: 11.Tietê, 22.Franca, 29.Serra Negra, 67.Ibitinga.
3/10: 9.Piracicaba, 17.Salto, 20.Americana, 37.Mogi Guaçu, 40.Sertãozinho, 42.Orlândia, 49.Limeira, 76.Matão, 77.Barra Bonita, 2.Jundiaí, 18.Rio das Pedras, 14.Indaiatuba, 31.São Carlos, 35.Araras, 1.Itu, 15.Santa Bárbara, 26.Amparo.
4/10: 33.Ribeirão Preto, 39.São José R.Preto, 68.Bariri, 112.Ourinhos, 79.Catanduva, 114.Pres.Prudente, 28.S.João da B.Vista.
5/10: 25.Casa Branca, 65.Dois Córregos, 72.Taquaritinga, 73.Nova Europa, 75.Boa Esperança, 82.Pindorama, 93.Cafelândia, 113.Palmital, 118.Regente Feijó, 61.Guairá, 60.Monte Azul.
6/10: 6.Porto Feliz, 7.Bragança, 19.Laranjal, 30.São Simão, 31.Cajuru, 32.Socorro, 124.Itararé, 97.Tupã, 80.Novo Horizonte, 66.Ribeirão Bonito, 102.S.Cruz R.Pardo, 85.Penápolis, 105.São Manoel, 41.Cravinhos, 63.Brotas, 69.Itápolis, 70.Bocaina, 74.Dourados, 92.Avanhandava, 96.Andradina, 78.Sta. Adélia, 5.Itapetininga, 86.Pirajuí, 4.Atibaia, 34.Mococa, 101.Avaré, 104.Piraju, 110.Assis, 111.Cerqueira, 116.Cândido Mota, 117.Pres. Venceslau, 43.São Joaquim.
7/10: 45.Serra Azul.
8/10: 84.Piratininga, 88.Avaí, 94.Garça, 98.Pereira Barreto, 109.Salto Grande, 115.Chavantes, 119.Itapeva, 36.Patrocínio, 57.Santa Rita, 107.S.Pedro do Turvo, 120. Capão Bonito, 126. Apiaí, 122.Iporanga, 123.S.Miguel Arcanjo, 125.Ribeira, 103.Bofete, 13.Cabreúva, 106.Itatinga.
9/10: 10.São Roque, 24.Batatais, 48.Araraquara, 52.Descalvado, 53.Pirassununga, 54.Jaboticabal, 56.Barretos, 62.Itirapina, 71.Pederneiras, 81.Mirassol, 83.Bauru, 87.Lins, 89.Araçatuba, 90.Birigui, 95.Marília, 99.Botucatu, 108.Agudos, 8.Campinas, 50.Rio Claro, 3.Sorocaba, 64.Jaú, 21.Mogi Mirim, 91.Promissão,100.Lençóis, 58.Bebedouro.
10/10: 23.Águas de Lindóia, 35.Igarapava, 38.Ituverava, 44.Morro Agudo, 46.Águas da Prata, 47.Pontal, 16.São Pedro, 59.Porto Ferreira, 12.Piracaia.