



ISSN: 2230-9926

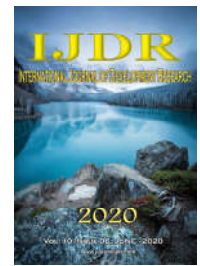
Available online at <http://www.journalijdr.com>

# IJDR

International Journal of Development Research

Vol. 10, Issue, 06, pp. 37311-37317, June, 2020

<https://doi.org/10.37118/ijdr.19155.06.2020>



RESEARCH ARTICLE

OPEN ACCESS

## EFFECTIVENESS OF LOCAL PRODUCTIVE ARRANGEMENTS IN THE STATE SAINT PAULO – BRAZIL

\*<sup>1</sup>Vailson Batista de Freitas, <sup>1</sup>Tânia Márcia Freitas and <sup>2</sup>Marco Antônio Pinheiro da Silveira

<sup>1</sup>PhD student of Administration at the University of São Caetano do Sul – USCS

<sup>2</sup>PhD in Administration (USP); Professor at the University of São Caetano do Sul – USCS

### ARTICLE INFO

#### Article History:

Received 17<sup>th</sup> March, 2020

Received in revised form

20<sup>th</sup> April, 2020

Accepted 27<sup>th</sup> May, 2020

Published online 30<sup>th</sup> June, 2020

#### Key Words:

Local productive arrangement;  
Business networks; Public policy.

#### \*Corresponding author:

Vailson Batista de Freitas,

### ABSTRACT

**Background:** To gain competitive advantages, companies are organizing themselves into local productive arrangements (APL) in several regions. However, in many cases, despite their successful establishment, these associations fail to play an effective role. **Aim:** Using secondary sources, this study conducted an analysis of 50 APL in São Paulo, Brazil, with the support of the state government, to determine the effectiveness of these arrangements. **Setting:** In this study, we focus on three elements: the existence of a formal board of directors, degree of sophistication of the APL website, and number of publications (scientific articles and journalistic reports) regarding a particular APL. **Methods:** The method used to verify the effectiveness of APL comprises a simplified form of analysis, by searching for journals in research bases, with analysis of the data by descriptive statistics, but can offer relevant preliminary indications. **Results:** The results showed that 34 of the 50 APL are effective, in terms of the three elements discussed above. **Conclusion:** The results in this work are considered to be important to indicate the sense of conducting this analysis for the APL supported by SDECT – Secretariat for Economic Development, Science and Technology of the State of São Paulo- Brazil.

Copyright © 2020, Vailson Batista de Freitas et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Citation:** Vailson Batista de Freitas, Tânia Márcia Freitas and Marco Antônio Pinheiro da Silveira. "Effectiveness of local productive arrangements in the State saint Paulo – Brazil", *International Journal of Development Research*, 10, (06), 37311-37317.

### INTRODUCTION

In search of competitive advantages, several companies are organizing themselves into business arrangements. These arrangements aim to provide everyone, even competitors, with mutual gains and more productive operations. Thus, companies set up local productive arrangements (APL) to face or circumvent issues, and excel in the market. According to Ribeiro et al. (2013), APL are a set of economic activities that have a certain link to production, interaction, cooperation, and learning, which can be developed by territorial clusters of political, economic, and social agents. They can be presented as clusters that mobilize governments and institutions with concrete actions and that are necessary for their development. Further, APL are located in the same territory and undertake correlated or similar productive activities. Public and private organizations are also considered part of this arrangement, and they work in the promotion and training of human resources—such as technical schools and universities—as well as in politics, promotion, and financing. Rede Sist (2003) highlights that APL can include any activity as they are

(...) territorial clusters of economic, political and social agents that have links, even if they are incipient, focusing on a specific set of economic activities. Generally, they involve the participation and interaction of companies—which can range from producers of final goods and services to suppliers of inputs and equipment, consulting and final services providers, trading companies, clients, among other—and their various forms of representation and association. They also include several other public and private institutions focused on: training and certification of human resources (such as technical schools and universities); research; development and engineering; politics; promotion; and financing (REDESIST 2003, p. 5).

Regarding the characteristics associated with APL, Castro (2009) discusses territory, productive specialization, learning and innovation, cooperation, and local actors. Since these characteristics have a link that goes beyond the productive issue, the need for governance immediately arises as the cooperation and interaction activities must be mediated.

According to Costa (2010), as these arrangements have been regarded as important strategic instruments for regional development, one of the forms of governance is government support for the development of APL in Brazil. In this study, governance is understood as complex processes of decision making, resulting in the distribution of power between the governors and the governed, decentralization of authority and functions linked to the act of governing, and partnership between the public and private sectors (SEBRAE 2003). Costa (2010) also reports that Brazil had 958 APL in 2010, 567 of which were in the primary sector (59% of the total). The tertiary sector was the minority, with only 47 arrangements, corresponding to only 5% of the total, where as the secondary sector had 344 APL (36%). The author correlates this fact with the characteristics of the Brazilian economy, which is still fundamentally based on the production matrix of the primary sector. Regarding the geographic distribution of these arrangements at the time, São Paulo, Brazil, had 41 APL according to the study. The state of São Paulo has the *Rede Paulista de Arranjos Produtivos Locais* (Local Productive Arrangements Network of the State of São Paulo), which is coordinated by the state of São Paulo through the Secretariat of Economic Development, Science, Technology, and Innovation (SDECT), with the participation of Sebrae-SP (Brazilian Micro and Small Enterprises' Support Service) and FIESP (Federation of Industries of the State of São Paulo). The data from SIDECT (2018) indicate that São Paulo has 50 APL and 24 productive clusters distributed in more than 120 municipalities, 14 of which are part of a pilot project executed with financing by the Inter-American Development Bank (IDB). Although APL are well established, both theoretically and practically, arrangements that cannot bring significant results for their participants are often created, which are referred to as APL that 'do not work' or are ineffective. In general, the initiative to create these associations comes from the city hall, which has the support of Sebrae. In this process, it is necessary for the APL to convince the entrepreneurs of the sector that they have a strong presence in the municipality or region, and this is a difficult endeavour. Generally, the participating companies are only small- or medium-sized ones, and the entrepreneurs have difficulty participating in meetings and even contributing the monthly fee, which is charged to maintain the managing entities.

The municipality of São Bernardo do Campo in São Paulo is a suitable example of the creation of effective APL as it created seven APL in 2013: chemicals, hardware, bakery, tourism, defence, bars and restaurants, and furniture. The city hall's website states that 'two more APL will be created in 2013: auto parts and printing. The most recent, the chemical APL, was launched on the 19th of last month, and it d already has about 40 members. Entrepreneurs, associations, unions and institutions of technical education and public administration are part of it' (MOURA 2015). In practice, the APL did not present an evident effectiveness. The next elected mayor from another political ideology contributed to this situation, because as is common in these situations, he did not emphasize the proposals of his predecessor. Thus, this study aims to identify the degree of effectiveness of APL, selecting for this analysis the APL supported by the Secretariat of the Government of the State of São Paulo. The study is relevant as its results may show the disparities that exist between associations in terms of effectiveness. These results may be the starting point for studies to strengthen the search for the reasons why APL have great or less effectiveness. Thus, one of the definitions of the

term effectiveness, which expresses the meaning used in this work, is worth mentioning: the ability to achieve real effects (Houaiss Dictionary).

## LITERATURE REVIEW

This section will present a literature review on the main concepts and definitions involved in this study from several authors to provide a better understanding of the subject addressed.

**Conceptualization of APL:** Business arrangements are identified by various nomenclatures: clusters, industrial districts, APL, industrial complexes, business networks, and local productive and innovative systems (SPIL). However, these terms are used erroneously many times as each one has specific characteristics, and although these differences are subtle, they exist. For this study, APL was understood as a synonym for *cluster*, as adopted by Porter (1999). Calheiros (2010) conceptualizes APL as a Brazilian denomination similar to the foreign concept of 'cluster'. This denomination is attributed to clusters of productive companies that belong to the same economic sector and share common territory and institutional environment. Moreover, APL must present the involvement of diverse actors, such as civil society associations, educational entities, and public entities.

For Cassiolato and Szapiro (2003), APL are

'local clusters that rely on the involvement of economic, political and social agents, which focusing on activities of a specific economic segment, have links with each other, even if incipient. These local clusters present the participation and interaction between companies that produce capital goods, services, suppliers of inputs and trading companies of the products of the cluster. They also rely on other organizations, public or private, to support the activities of the cluster, such as: financial companies, political entities, entities for promotion, research and development, universities and other entities for training and qualification of the workforce' (Cassiolato & Szapiro 2003b, p. 5).

La Rovere and Shehata (2007) establish that the basic difference between the concept of *cluster* and local productive systems is that the latter, in addition to indicating the presence of externalities as advantages of the cluster, highlights the role of the institutions, that is, not only governmental but also financial institutions, as well as training and research institutions. Thus, local actors have remarkable weight and evidence as agents for the promotion of the development for mobilization. Another small distinction is that *clusters* comprise competition and cooperation and may or may not be composed of companies belonging to the same sector.

*Clusters*, according to Aquino and Bresciani (2005), are

'...a conception of local and regional development, which can be found in developed or developing countries. They are characterized by the great potential to generate competitive advantages, even without the intervention of the government or other support entities. Cooperative actions between companies with the objective of creating value can be found in the clusters, thus being able to increase local competitiveness through collective action

with various local actors, attracting schools, certification laboratories, foreign trade agencies and others' (Aquino & Bresciani 2005, p. 159).

Regarding whether the companies belong to the same sector, Porter defines *cluster* as a 'geographic concentration of interconnected companies, specialized suppliers, service providers, firms in related sectors and associated institutions in a given sector connected by communities and complementarities'; that is, there is always a flagship sector, but there are several complementarities (Porter 1990, p. 199). Companies in a cluster not only cooperate but also compete according to the analyses of Porter (1990; 1999), Schmitz (2000), Giuliani (2005), since they establish that clusters are a geographic concentration of interconnected companies, specialized suppliers, service providers, firms of a certain industry, and associated institutions in a particular field in which they compete but also cooperate.

According to Lacono and Nagano (2010) and Marini and Silva (2010), particularity between clusters and APL, APL is a specific type of cluster that includes small and medium companies. That is, they consider that there is a prioritization of small- and medium-sized companies in the APL. Costa confirms that APL is '(...) a form of industrial organization, which structure is made of a cluster of companies - generally small and medium sized - located territorially and that are related to each other by a small division of labor' (Costa & Costa 2005, p. 9).

For Crocco et al. (2003), APL are

'[...] characterized by geographical proximity, sectoral specialization, predominance of small and medium-sized enterprises (SMEs), inter-firm cooperation, inter-firm competition based on innovation, exchange of information based on socially constructed trust, active support organizations in service provision and close partnership with the local public sector. Its innovative dynamism comes from the fact that it is a specific and localized type of institutional arrangement capable of establishing interactive collective learning, which in turn is fed and induced in the process of time by the very process of competition among the firms in the district' (Crocco et al. 2003, p. 8).

La Rovere and Shehata (2007) state that APL are productive systems in constant formation, shaped by evolving learning processes and characterized by the cognitive systems of knowledge sharing between companies and entities. They also state that this concept is an advantageous element owing to the participating actors, since it focuses not only on the government's role but also overall on the role of financial institutions, as well as the research and training institutions. Thus, the role of local agents is valued while increasing the productive system. Azevedo et al. (2013) emphasize that the Ministry of Development, Industry and Foreign Trade coined APL to designate regional clusters of companies in the same sector. Castanhar (2006) highlights that the conception adopted by various government agencies with policies focused on the theme APL and also that there is a basic definition in the academic environment itself; it presents APL as

'Local productive arrangements are clusters of companies located in the same territory, which present productive

specialization and maintain some link of articulation, interaction, cooperation and learning among themselves and with other local actors, such as government, business associations, credit, teaching and research institutions' (Castanhar 2006, p. 347).

Evidently, the actors are always highlighted in all definitions. Meanwhile, Aquino and Bresciani (2005) touch on another fundamental point: development. 'The APL is an important form of productive organization for the development of organizations, impacting the economic and social, regional and national development. The development of the APL depends on the relationship of trust between its actors and the effective cooperation between them. It is up to the public sector to create policies that favor the development of APL, ranging from the development of an infrastructure to its commercial promotion' (Aquino & Bresciani 2005, p. 166-165). To use the APL as a strategy for regional development, we must consider all the actors, especially those who are agents of governance so that the dynamization process becomes successful.

**Factors identifying the effectiveness of APL:** The literature on APL presents several elements that characterize these associations, as well as the benefits and expected results for the participating companies and the group. Generally, when the effectiveness of an APL is verified, this would imply the verification of the presence and intensity of these characteristics in the arrangement. However, some elements can be considered common to all APL, while others may be more present in certain types of arrangements. Amato Neto (2009) proposed a system of indicators for evaluating industrial clusters and APL. The system is made of nine dimensions, with the author defining a set of indicators for each dimension. Some of these indicators can be considered relevant for verifying APL's effectiveness. The 'quotient of localization indicator' in the geographical dimension is particularly noteworthy; Other notable indicators include: the indicators 'existence of an identification seal for APL's products' and 'existence of the support of public authorities' in the institutional dimension; the 'partnership of companies and educational institutions' indicator in the technological dimension; the 'existence of a governance agent in the APL' indicator in the governance dimension; and the 'commercial management (marketing)' indicator in the management training dimension. Zaccarelli et al. (2008) present fundamental concepts related to clusters or business networks: supra-enterprise entity, supra-enterprise self-organization, and supra-enterprise governance.

**Governance of local productive arrangements:** Based on the assumption that cooperation in APL, whether they be productive, innovative, or interactive, should exist, all of APL's dynamization should have leadership. This is because cooperation in APL occurs among different actors within an interactive and dynamic process, as emphasized by Sebrae (2003) in addition to cooperation and competition coexisting within the productive arrangement. Governance can be defined as a dynamic interaction between people, structures, processes, and traditions that support legitimate authority in providing good leadership, direction, supervision, and control of an entity to ensure that its purpose is achieved (Pires et al. 2011, p. 38).

Actors as agents of governance is evident from Costa's (2010) discourse when he outlined that this

‘can be understood as a group of agents "orchestrated" by an explicit or implicit degree of institutionalization to the cluster, seeking harmony, interaction and cooperation, not forgetting, and it is worth repeating, that these elements occur in a competitive environment, in which there are subjects with distinct degrees of power and with diverse and often antagonistic territorial projects’ (Costa 2010, p. 127).

Several actors are linked directly to the development of local productive activity, or indirectly linked to it, such as institutions of promotion, financing, and credit; teaching and research; technological centres; business associations; service providers; third-sector organizations; and governances in all fields (physically located in the APL or nearby) (Sebrae 2003). All these local actors, depending on their commitment, can represent key players within the governance role, depending on how productive arrangement designs their management. Hence, Nagamatsu, Resende, and Hatakeyama (2009) emphasize the governance model. ‘There is no single model of governance, although there are some elements in common, each APL needs to adapt its application to its cultural circumstances; the APL need to innovate and adapt their governance practices to remain competitive, with the perspective on the emergence of new opportunities for capitalization and growth; and the principles of governance evolve and should be reviewed whenever significant changes occur, within and around the APL’ (Nagamatsu, Resende and Hatakeyama 2009, p. 4112).

For the governance of APL specifically, there are aspects of coordination, intervention, and participation in the local decision processes of the different agents (state, companies, citizens and workers, nongovernmental organizations), as stated by Iparde (2006). These aspects are complemented by adding the management of other activities to the governance, such as those involved in the organization of production flows, generation process, dissemination, and use of knowledge. Amato Neto (2009) highlights the complexity of the coordination forms made through governance.

‘(...) the various forms of coordination of economic activities, as well as the actions carried out by the various public and private agents in a given productive cluster. In this sense, it is important to highlight that these forms of coordination, intervention and participation in local decision processes and hierarchies within a productive cluster/arrangement may also represent different forms of decision-making power, that is, in a more or less formal and more centralized or decentralized manner’ (Amato Neto 2009, p. 47).

Therefore, governance is regarded as a broad and complex term and encompasses not only productive processes but also all actions of articulation, awareness, and mobilization. SEBRAE (2003), when dealing specifically with governance in APL, states that it encompasses various forms of leadership, coordination, intervention, participation, and negotiation of conflicts in local decision processes. It is also related to how the actors can be a network of diverse agents, including governments, companies, citizens and workers, and nongovernmental organizations, which can be individuals or companies linked to investment functions in the access of public goods of production. When relating development,

productive arrangements, and governance and support, authors such as Simonetti and Kmimura (2016) state that

‘In order for these productive arrangements to grow and develop, there must be a synergy of knowledge, of the regulation in the relationships created by economic and social actors supported by institutional systems towards the interests and needs of the activities developed in the region. In order for the project to have a competitive success, there must be an articulation between the companies and between the companies and the environment where they are inserted by support structures’ (Simonetti&Kmimura 2016, pg. 21).

The activities relating to governance are also as varied as the agents of governance, since these activities range from the process of generation, dissemination, and use of knowledge to the institutional and operational environment of the arrangements (SEBRAE 2003).

## METHODOLOGY

As presented in the previous section, the literature review, several parameters can be used to evaluate the effectiveness of an APL. The governance aspect is highlighted as an element considered essential to indicate that APL works. This study involved verifying several basic aspects for each of the APL selected to conduct the research, which are supported by SDECT. Through Internet search, whether the APL has any address or space on the Internet and if the APL has a defined board of directors was verified (i.e., with indication that people occupied these positions). The site’s degree of sophistication indicates the effectiveness of the arrangement. This is related mainly not only to the institutional dimension but also to the management training dimension, especially with regard to the commercial management (marketing) indicator. The existence of APL’s Board of Directors was a simplified way to demonstrate the existence of governance in the APL. The third aspect we studied was the existing publications about the APL, gathered through the Google Search engine. The publications were identified as academic articles and reports. When ‘APL’ is input in the search engine, the results pertaining to publications were counted. This aspect played a major role in identifying the degree of effectiveness of the APL. It was considered that if many publications deal with the arrangement, then this APL has worked effectively and has produced results.

The method used to verify the effectiveness of the APL comprise a simplified form of analysis, but it can offer relevant preliminary indications. Therefore, this study has a descriptive character and is identified as such, as according to Charoux (2008), it aims to describe, narrate, and classify the characteristics of a situation and establish connections between the theoretical-conceptual basis and the results found. For the operationalization of the analysis, the score obtained by the APL was formulated to set equal weights on the three elements selected to identify the effectiveness of the APL (1/3 each element). Regarding the element related to the APL with some address or space on the Internet, three possibilities were defined. For the APL that have a page inserted in the website of a union or association, the maximum score for the element was 33.3%. As no APL was found with an exclusive Internet address for the association, this was considered the most favorable condition in this element. As a second category in

this evaluation item, APL with a page (usually static) inserted in third-party websites were considered, such as city hall, Sebrae, or other government agencies. Facebook pages were also included in this category. For this group, half of the maximum weight was considered in this element (16.6%). If the APL does not have any space on the Internet, it received the value of zero in this item. For the second element selected to evaluate the effectiveness of the APL, which considers the existence of a formally defined board of directors, only two possibilities were defined: maximum score (33.3%) for the arrangements with board of directors and zero for those without board of directors. Finally, for the element regarding existing publications about the APL, the maximum weight (33.3%) was given to the APL, which had the highest number of publications found when Google searches were performed. This was the APL of the Medical Dental Equipment of Ribeirão Preto, with 23 publications. For the other APL, the weight was calculated by a rule of three, considering the proportion in relation to the APL of reference.

## RESULTS

Table 1 presents the results obtained from the searches carried out for each APL, identifying how the three elements used for the analysis of its effectiveness are manifested. The APL are presented in the table in descending order of the effectiveness score used. As shown in the table, the APL of the Medical Dental Equipment of Ribeirão Preto was considered the most effective among those supported by the SDECT according to the criteria defined for the evaluation. The number of existing publications was proven to be decisive in considering that the APL is effective, since the associations that occupy up to the 28th positions have the other two factors fully attended. In contrast, the APL that occupy the last positions in terms of effectiveness are those that do not have a defined board of directors. It was observed that this group includes three APL from the ABC region of the state of São Paulo (defence, hardware, processed plastics, and mechanical metallurgy).

**Table 1. Ranking of APL in São Paulo according to their degree of effectiveness**

	APL	SECTOR	Website	Board of Directors	Articles	News	Total	Score Public.	APL Score
1	Ribeirão Preto	Medical and Dental Equipment	33,3%	33,3%	18	5	23	33,3%	100,0%
2	Piracicaba	Ethanol Chain	33,3%	33,3%	20	0	20	29,0%	95,7%
3	São José dos Campos	Aerospace	33,3%	33,3%	16	4	20	29,0%	95,7%
4	Pedreira	White Ceramics	33,3%	33,3%	15	3	18	26,1%	92,8%
5	Santa Gertrudes	Ceramic	33,3%	33,3%	11	3	14	20,3%	87,0%
6	Ibitinga	Bed, Table, and Bath Embroidery	33,3%	33,3%	11	2	13	18,8%	85,5%
7	Itú	Red Ceramics	33,3%	33,3%	10	3	13	18,8%	85,5%
8	Grande ABC	Textile and Clothing	33,3%	33,3%	7	3	10	14,5%	81,2%
9	Tabatinga	Textile Artifact/Plush Animals	33,3%	33,3%	9	0	9	13,0%	79,7%
10	Limeira	Semi-jewellery	33,3%	33,3%	7	2	9	13,0%	79,7%
11	Americana	Textile and Clothing	16,7%	33,3%	15	5	20	29,0%	79,0%
12	Birigui	Children's Shoes	33,3%	33,3%	7	1	8	11,6%	78,3%
13	Mirassol	Furniture	33,3%	33,3%	5	2	7	10,1%	76,8%
14	Franca	Men's Shoes	33,3%	33,3%	6	0	6	8,7%	75,4%
15	Santa Cruz do Rio Pardo	Leather and Shoes	33,3%	33,3%	5	0	5	7,2%	73,9%
16	São José dos Campos	Information and Communication Technology	33,3%	33,3%	5	0	5	7,2%	73,9%
17	Alta Mogiana (Franca)	Specialty Coffee	33,3%	33,3%	1	3	4	5,8%	72,5%
18	Jauú	Women's Shoes	33,3%	33,3%	4	0	4	5,8%	72,5%
19	Bragança Paulista	Hardware	33,3%	33,3%	0	3	3	4,3%	71,0%
20	Holambra	Flowers	33,3%	33,3%	1	2	3	4,3%	71,0%
21	Ribeirão Preto	Software	33,3%	33,3%	3	0	3	4,3%	71,0%
22	São José do Rio Preto	Jewelry	33,3%	33,3%	3	0	3	4,3%	71,0%
23	Tatuí	Red Ceramics	33,3%	33,3%	3	0	3	4,3%	71,0%
24	Panorama	Red Ceramics	33,3%	33,3%	2	0	2	2,9%	69,6%
25	Diadema	Cosmetics	33,3%	33,3%	1	0	1	1,4%	68,1%
26	R M de São Paulo	Furniture	33,3%	33,3%	1	0	1	1,4%	68,1%
27	Marília	Information Technology	33,3%	33,3%	0	0	0	0,0%	66,7%
28	São José do Rio Preto	Information and Communication Technology	33,3%	33,3%	0	0	0	0,0%	66,7%
29	Ribeirão Preto	Beers	16,7%	33,3%	1	6	7	10,1%	60,1%
30	Porto Ferreira	Artistic Ceramics	16,7%	33,3%	6	0	6	8,7%	58,7%
31	Cunha	Artistic Ceramics	16,7%	33,3%	5	0	5	7,2%	57,2%
32	Tambaú	Red Ceramics	16,7%	33,3%	5	0	5	7,2%	57,2%
33	Mairiporã	Events	16,7%	33,3%	0	4	4	5,8%	55,8%
34	Itapeva	Wood	16,7%	33,3%	1	1	2	2,9%	52,9%
35	Presidente Prudente	Software	33,3%	0	0	8	8	11,6%	44,9%
36	Vargem Grande do Sul	Red Ceramics	0%	33,3%	5	1	6	8,7%	42,0%
37	Cerquillo/Tietê	Children's Clothing	0%	33,3%	4	0	4	5,8%	39,1%
38	Sertãozinho	Mechanical Metallurgy	0%	33,3%	4	0	4	5,8%	39,1%
39	Urupês	Jeans	0%	33,3%	1	3	4	5,8%	39,1%
40	Vale do Paraíba	Milk	0%	33,3%	0	2	2	2,9%	36,2%
41	Vale do Paraíba	Honey	0%	33,3%	2	0	2	2,9%	36,2%
42	Grande ABC	Defence	33,3%	0	0	1	1	1,4%	34,8%
43	Grande ABC	Hardware	33,3%	0	0	1	1	1,4%	34,8%
44	Grande ABC	Processed Plastics	16,5%	0	3	9	12	17,4%	33,9%
45	Cafelândia	Pet Products	0%	0	0	7	7	10,1%	10,1%
46	Jundiá	Winegrowing	0%	0	4	1	5	7,2%	7,2%
47	Itapeva	Agroindustry	0%	0	0	3	3	4,3%	4,3%
48	Grande ABC	Mechanical Metallurgy	0%	0	2	1	3	4,3%	4,3%
49	Baixada Santista	Logistic Services	0%	0	0	1	1	1,4%	1,4%
50	São Paulo	Games	0%	0	0	1	1	1,4%	1,4%

Source: Elaborated by the authors

Table 2. Effectiveness of APL for the three selected segments

Ceramic	Effective.	Textile	Effective.	Shoes	Effective.
Pedreira	93%	Ibitinga	86%	Birigui	78%
Santa Gertrudes	87%	Grande ABC	81%	Franca	75%
Itú	86%	Tabatinga	80%	Santa Cruz do Rio Pardo	74%
Tatui	71%	Americana	79%	Jaú	73%
Panorama	70%	Cerquillo/Tietê	39%		
Porto Ferreira	59%	Urupês	39%		
Cunha	57%				
Tambaú	57%				
Vargem Grande do Sul	42%				

Source: Elaborated by the authors

Considering the final score attributed to the APL, 34 (68%) were effective above 50%. Meanwhile, 30 APL have a website, and 40 have a defined board of directors. Table 1. There is heterogeneity in the degree of effectiveness within the selected segments, ceramics, textile, and shoes, except in the shoes segment, where they all had effectiveness above 70%.

## Conclusion

This study presented an initial proposal for measuring the effectiveness of APL. The indicators selected for the analysis and the weights attributed to them are a simplified version of the system that can be crucial for APL managers and for agencies such as SDECT –Secretariat for Economic Development, Science and Technology of the State of São Paulo. As a preliminary proposal, the study emphasized the order of the APL supported by the Secretariat according to their effectiveness. We must verify to what extent APL actually exist, as it is known that arrangements can be formally constituted and are not effective in reality. The fact that only 34 of the 50 APL supported by SDECT have obtained effectiveness of above 50% leads to questions about the actual effectiveness of the action and also of the support agencies. These results create the interest for an in-depth analysis with the focus on observing what happens with the 16 arrangements with the effectiveness of below 50%. Accomplishing the task of searching for information based on the defined criteria and the observation of the obtained results led to an evaluation of the adequacy of the selected elements for the analysis and of the weighting adopted. The level of the website's (or webpage) sophistication must be considered in the analysis of the effectiveness of APL, as this information is easily obtained. This variable indicates the strength of the 'brand' of the APL and the extent to which the association establishes relationships with customers and the general public. However, in our study, we found that strengthening the categorization adopted for the types of websites, which was limited to two in this case, is necessary. Furthermore, the importance given to the number of publications dealing with APL may have been high, as it ended up being decisive for a large set of APL that completely met the other two elements (i.e., sophistication of the site and existence of a defined board of directors). The main question regarding the use of this element to evaluate the effectiveness of APL is the following: To what extent can there be publications that discuss APL that have little effectiveness? Among those studied, we have the example of the APL of Processed Plastics of the Grande ABC, which had an expressive number of publications, but it did not completely meet the other elements. However, the publications found were mostly news, which leads us to think about the possibility of prioritizing publications of a technical-scientific nature.

Finally, it should be noted that the inclusion of other indicators will enhance the study of the effectiveness of APL. The results in this work are considered to be important to indicate the sense of conducting this analysis for the APL supported by SDECT –Secretariat for Economic Development, Science and Technology of the State of São Paulo.

**Competing interests:** The authors declare that they have no financial or personal relationships that may have inappropriately influenced the authors when writing this article.

**Author contributions:** All authors meet the criteria for authorship described in the authoring policies and declaration policies of the author's contribution, aiming at a better dissemination of scientific research in administration.

**Data availability:** The data that generated the results of this research are available for consultation with the authors.

**Disclaimer:** The opinions expressed in this article are those of the authors and do not reflect any opinions of the Institutions mentioned.

## REFERENCES

- \_\_\_\_\_, 2003b, O foco em arranjos produtivos e inovativos locais de micro e pequenas empresas. In: Cassiolato, J.E., Lastres, H.M.M. & Maciel, M.L. (Orgs.), Pequena empresa: cooperação e desenvolvimento local. Relume Dumará, Rio de Janeiro.
- Amato Neto, J., 2009, *Gestão de sistemas locais de produção e inovação (clusters/ APL): um modelo de referência*, São Paulo, Atlas.
- Aquino, A.L. & Bresciani, L. P., 2005, 'Arranjos produtivos locais: uma abordagem conceitual', *Organizações em contexto*, São Paulo 1(2).
- Azevedo, R.R., Silveira, M.A.P., Cunha, C.A., Lopes, D., Fernandes, J.L.N. & Pereti, L.C., 2013, 'A Importância das Trocas de Informações Para os Relacionamentos Empresariais em um APL de Design e Arquitetura', *Revista da Micro e Pequena Empresa*, Campo Limpo Paulista, 7(1) 17-31.
- Calheiros, D.O., 2010, 'Arranjo Produtivo Local: Oportunidades e Desafios Para a Implantação da Cadeia Produtiva da Vitivinicultura na Região de Jundiaí', *Revista da Micro e Pequena Empresa*, Campo Limpo Paulista, 4(1), 127-142.
- Cassiolato, J.E. & Szapiro, M., 2003a, Uma caracterização de arranjos produtivos locais de micro e pequenas empresas, In: Cassiolato, J.E., Lastres, H.M.M. & Maciel M.L.

- (Org.), *Pequena empresa: cooperação e desenvolvimento local*, Relume Dumará, Rio de Janeiro,
- Castanhar, J.C., 2006, Arranjos Produtivos Locais como estratégia de interiorização da atividade econômica, com dinamismo e redução das desigualdades, In: FLEURY, Sonia (Org.), *Democracia, descentralização e desenvolvimento*, FGV, Rio de Janeiro.
- Castells, M., 1999, *A sociedade em rede*, São Paulo, Paz e Terra.
- Castro, L.H. de., 2009, *Arranjo produtivo local*, Brasília, Sebrae.
- Charoux, O.M.G., 2006, *Metodologia: processo de produção, registro e relato do conhecimento*, 3ª ed, DVS, São Paulo.
- Costa, A. & Costa, B., 2005, Cooperação e capital social em arranjos produtivos locais. In: *Anais do Encontro Nacional ANPEC, Natal*, Disponível em: <[www.anpec.org.br/encontro2005/artigos/A05A113.pdf](http://www.anpec.org.br/encontro2005/artigos/A05A113.pdf)>, Acesso em 01 de novembro de 2018.
- Costa, E.J.M. da, 2010, Arranjos produtivos locais, políticas públicas e desenvolvimento regional, Brasília: Ministério da Integração Nacional, Disponível em [http://www.mi.gov.br/c/document\\_library/get\\_file?uuid=58908ef0-c6ff-45f3-ac3f-91b2baf3e755&groupId=10157](http://www.mi.gov.br/c/document_library/get_file?uuid=58908ef0-c6ff-45f3-ac3f-91b2baf3e755&groupId=10157)>, acesso em 01 de novembro de 2018.
- Costa, E.J.M., 2010, *Arranjos Produtivos Locais, Políticas Públicas e Desenvolvimento Regional*, Mais Gráfica Editora, Brasília.
- Crocco, M.A., et al., 2003, Metodologia de identificação de arranjos produtivos locais potenciais, Cedeplar, jul. 2003, (Texto para Discussão, n. 212).
- FIESP & Ministério do Desenvolvimento, Indústria e Comércio (MDICEx), 2004, Manual de atuação em Arranjos Produtivos Locais, Brasília, Depto. de Competitividade e Tecnologia da Fiesp/Depto. de MPMEs.
- Iacono, A. & Nagano, M.S., 2010, 'Interação e Cooperação em Arranjos Produtivos Locais de Micro e Pequenas Empresas', *Revista da Micro e Pequena Empresa*, Campo Limpo Paulista, 3(3), 4-19.
- IPARDES, 2006, Instituto Paranaense de Desenvolvimento Econômico e Social. Arranjos produtivos locais do estado do Paraná: identificação, caracterização e construção de tipologia, Curitiba, Secretaria de Estado do Planejamento e Coordenação Geral/Ipardes.
- La Rovere, R.L. & Shehata, L.D., 2007, 'Políticas de apoio a micro e pequenas empresas e desenvolvimento local: alguns pontos de reflexão', *Redes (Santa Cruz do Sul)* 11, 1.
- Marini, M.J. & Silva, C.L., 2010, 'Políticas Públicas e Arranjos Produtivos Locais: Uma Análise do APL de Confeção Sudoeste do Paraná', *Revista Paranaense de Desenvolvimento*, Curitiba, (118), 87-112.
- MDIC – Ministério do Desenvolvimento, Indústria e Comércio Exterior, Arranjos produtivos locais, disponível na internet em [www.mdic.gov.br](http://www.mdic.gov.br), Acesso em 1 de novembro de 2018.
- Moura, C.E., 2015, *Instrumento Para Gestão De Informações Entre Órgão Governamental E Arranjos Produtivos Locais*, Tese de Doutorado apresentada, Faculdade de Engenharia, Arquitetura e Urbanismo da Universidade Metodista de Piracicaba.
- Nagamatsu, R.N., Resende, L.M. & Hatakeyama, K. Cabo Verde: redes e desenvolvimento regional, In: Congresso De Desenvolvimento Regional De Cabo Verde, 1., 2009, Paraná, Anais... Paraná, 2009, pp. 4108-4127, Disponível em: [www.apdr.pt/congresso/2009/pdf/Sessão\\_%2041/183A.pdf](http://www.apdr.pt/congresso/2009/pdf/Sessão_%2041/183A.pdf), Acesso em 1 de novembro de 2018.
- Pires, E.L.S. et al, 2011, Governança territorial: conceito, fatos e modalidades / - Rio Claro: UNESP - IGCE, Programa de Pós-graduação em Geografia, -p. 192., : il., figs., quadros.
- Porter, M., 1990, *The competitive advantage of nations*, New York, Basic Books.
- Porter, M.E., 1999, *Competição: On competition – Estratégias competitivas essenciais*, Campus, Rio de Janeiro.
- REDESIST, 2003, *Glossário sobre arranjos e sistemas produtivos e inovativos locais*, Rio de Janeiro, Disponível em: <[www.redesist.ie.ufrj.br](http://www.redesist.ie.ufrj.br)>. Acesso em 1 de novembro 2018.
- Ribeiro, K.Á., Nascimento, D.C., Junior, N.F.C., Morato, J.A.Q., 2013, 'Arranjo Produtivo Local (APL) Como Estratégia de Potencializar as Fronteiras Mercadológicas do Apicultor no Perímetro de Irrigação Senador Nilo Coelho em Petrolina-Pe', *Revista de Gestão, Finanças e Contabilidade*, UNEB, Salvador, 3(2), 99-120.
- Rifkin, J., 2001, *A era do acesso*, Makron Books, São Paulo.
- Sebrae., 2003, *Termo de Referência para Atuação do Sistema SEBRAE em Arranjos Produtivos Locais*, SEBRAE, Brasília.
- SIDECT – Secretaria de Desenvolvimento Econômico – SP, *Lista de APL*, <http://www.desenvolvimento.sp.gov.br/lista-de-APL>. Acesso em 1 de novembro de 2018.
- Simonetti, E.R.S. & Kamimura, Q.P., 'Análise de efetividade das políticas públicas de Arranjo Produtivo Local', *Revista Adm. Pública*, Rio de Janeiro, 50(3), 425-454.
- Zaccarelli, S.B., Telles, R., Siqueira, J.P.L., Boaventura, J.M.G. & Donaire, D. 2008, *Clusters e Redes de negócios: uma nova visão para a gestão dos negócios*, Atlas, São Paulo.

\*\*\*\*\*