

Characterization of the wood production cluster in the city of Ponta Grossa, Brazil

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Abstract

This work presents an approach about the gathering of wood industries in the city of Ponta Grossa, State of Paraná, in the South of Brazil. Demonstrating that the industrial lumber sector is suffering sensitive progress and for this reason developing in a natural way, a cultural identity tending in the development of a future local productive arrangement in the form of a cluster. With the coming of globalization, the wide possibility of exports in wood products is facilitating this formation process. The methods used in this article begin with a revision of literature that made possible the chain reaction and the development of the interconnections among the actors involved in local productive arrangement. This analysis made possible the identification of the current state of development of the local productive arrangement.

Key words: Export; Local development; Local Productive Arrangements; Clusters

Résumé

Cette étude présente une analyse sur l'agglomération d'industries du bois dans la ville de Ponta Grossa située dans l'Etat du Paraná au sud du Brésil. Elle montre que le pôle industriel du bois est en train de se modifier et nous voyons surgir une nouvelle identité culturelle qui dans le futur pourra transformer l'actuelle organisation productive locale (OPL) en cluster. Cette transformation est facilitée par la mondialisation qui ouvre de plus en plus les portes de l'exportation pour les produits du bois. D'un point de vue méthodologique cet article commence avec un état de l'art des idées qui ont permis le développement des relations entre les partenaires concernés par l'OPL. Cette analyse a permis d'identifier le stage actuel de l'OPL du bois dans la région de Ponta Grossa.

Mots-clés : exportation ; développement local ; organisation productive locale ; clusters.

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Introduction

Seeing the importance of the formation of local productive arrangements (LPA) as a tool for invigoration of an industrial sector, this article will demonstrate the beginning of such a process in the lumber sector.

The area of the municipal district of Ponta Grossa in the state of Paraná is in the south of Brazil in a region known as Campos Gerais. Ponta Grossa possesses a tradition in the lumber sector that dates from the end of the XIX century. The municipal district occupies the fourth place among the most populous cities of the state, with a population of 273.469 inhabitants and an annual growth rate of 1.94%. The economic activity is divided in 5% in the agricultural sector, 56% in the industrial sector and 39% in the service sector (IBGE, 2000). The municipality is distant 118 km from the capital city of the State, Curitiba, 278 km of the port of Paranaguá PR and 330 km of the port of Itajaí - SC and possessing railway conjunction that makes possible a fast flow of the production. The area also possesses a considerable infrastructure of technical and higher education and the energy demand is also supplied with ease. With these characteristics, the municipal district presents favorable conditions for the industrial activity.

These favorable conditions turned the municipal district in an attractive area for the industrial sector in the state of Paraná. The wood industry accompanied the development of the city and suffered a decline during some decades. Recently this sector is recovered and prospering due to the globalization processes.

Globalization and Economy

Globalization is altering production manners, productive structures, location patterns and establishing new ways of competitiveness in the economical level, clusters and networks of companies are strengthening local production with this (Cunha, 2002). With these alterations, new paradigms are appearing and market characteristics are modified. National borders are broken and start to be inexistent for the small and medium size companies. The capacity of adaptation to changes drove small and medium organizations to a level where they can be rearranged to maintain competitive.

The globalization process provoked changes in the economical processes of the world by creating the need to search for customers and suppliers out of the national borders. Due to these needs, organizations were motivated to alter their commercialization models and started to look for the foreign market to maintain their competitive advantages.

Even with the regional and national commercial success of organizations, they observe the need of geographical dispersion of their products for markets beyond their national territorial borders. This dispersion does not only happen with large organizations, organizations of small and medium sizes are finding space also in the international markets. This is due to advanced technology that joins value and quality to their products making it possible for the opportunity of penetration in these demanding price and quality markets.

Globalization made it possible for organizations to distribute their products in all of the consumer markets of the world. In order to reach these markets there is the need to produce for certain niches that demand a differentiation in the goods. To reach this differentiation exporting organizations need, in many moments, to import up-to-date technologies in order to adapt to the quality needs imposed by the importers and also to be competitive in price.

The globalization process also brought a new conception of local and regional development and that, according to Stamer (2001), happens starting from the promotion of industrial agglomerates, that in the last years is acquiring importance, in industrialized and in developing countries.

This process opens spaces for development of small and medium size companies, meaning a change in the path of development that starts to value the local development (Naisbitt 1994).

However, exports should not be characterized as an isolated event in business development. For Garcia (2001) exports should be treated as an activity that has been developed parallel to other representative commitments of the economical life in the organization, meaning the perfect integration of this new activity with the regular operations developed in the organization.

Garcia (2001) explains that to relegate export to a secondary level in the list of events means to attest that the organization did not adapt exports to its business atmosphere. It is observed that, to export only the surpluses is equal to the absence of an organizational pledge, generating a retrograde behavior due to the lack of necessary entrepreneurship for the existence of the organization in the globalize world.

For some companies the export process is not possible due to the installed production capacity or the technological level of development that they possess. Even without this production capacity and technological development, these organizations can participate in the export process in an indirect form, via a productive cluster or local productive arrangement.

Cluster / Local Productive Arrangement (LPA)

Clusters are concentrated groupings of interrelated companies and correlated institutions, in a certain sector, linked by common and complementing elements. The formation of a cluster varies of a single city or state to an entire country or even a net of neighboring countries (PORTER, 1998).

Porter explains that the interconnections of a group of companies and institutions in a cluster, accentuates the coordination opportunities and mutual refinement. The interconnections create refinement in areas of common interest, without threatening, distorting competition or restricting the intensity of rivalry, providing an efficient system for dialogue among correlated companies and suppliers.

A Local Productive Arrangement (LPA) defined by Melo & Casarotto Filho (2000) as being a concentration of companies of the same sector, under the form of a structured system, with the presence of interrelations in this group of companies. Cassarotto Filho (2004) complements this concept with the following vision: A LPA is a great associative network, through mechanisms of integration of all of the representative entities of the area, seeking development. The local productive system can be defined as an area strongly structured,

containing one or more clusters, with territorial planning with high public and private interaction, and respecting local culture with the objective of assuring the inhabitants quality of life.

Albagli and Brito (2002) they define LPA as being a significant grouping of organizations that act around a main productive activity, as well as correlate companies in the same geographical space (a municipal district, group of municipal districts or region). A LPA possesses a local cultural identity, articulation bonds, interaction, cooperation and learning amongst themselves and with other local organizations. These local organizations can be public and private institutions, promotion and consultancy, technical schools and universities, research institutions, class entities and support institutions to the organizations.

LPA or clusters possess the function of strengthening the key organization and the organizations and institutions that supply their needs, such as technological demands and of raw materials. According to Porter (1993), the more the groupings grow, more the resources and the economy tend to flow to them and moves away of the organizations that work in an isolated manner. This aspect detaches the importance of the geographical proximity among the industries, many times, in a single city or area of a country. The geographical concentration integrates and strengthens the process, this way maintaining the developed competitive advantages.

The Lumber LPA product

The main product is "clear blocks", "blanks" and "mouldings." These wood blocks, produced from plantation pine forests, serve as raw material for the production of frames, linings, doors, sashes, among others. The logs are transformed in small wood blocks, that should be flat, dry, square and that do not present any defects forming by this way a "clear block." The "blanks" are "clear blocks" amended longitudinally with dimensions that vary from 3 meters to 8 meters. Martins (2001) explains, that the production of "clear blocks", in spite of being derived of the general lumber industry, possesses a more elaborated productive process, and that it uses higher technology than the conventional lumber process.

The "mouldings" are one of the most complex products developed inside of LPA. They are produced starting from the transformation of the "blanks", in equipments of great precision, in ornamental frames. A small number of organizations in the lumber LPA in Ponta Grossa possess the technological capacity for the production of this material. This product is totally exported for the United States and Europe and these markets demand that the lumber must be originated from plantation forests.

The products are manufactured in reforested pine wood and new genetic alternatives are being developed for the production of the *Taeda Pine* species. This is the main species grown in the South and Southeast of the Country. In this way the States of Paraná and Santa Catarina, are the main cultivators of forests with this species of pine and it is in this area that the industry is concentrated.

According to the Institute of Handling and Forest and Agricultural Certification IMAFLORA, the state of Paraná, is responsible for more than 60% of the national production of 'clear blocks'. The LPA used this wood due to the great acceptance in the international market, besides being a species that is planted abundantly in the region.

LPA evolution

It was observed through the field research that the lumber LPA of the Ponta Grossa area is in an intermediate state. It is between the Phase 02 and the Phase 03 as it can be observed in the illustration 01, where not all of the organizations are interlinked, but begin the process in a slow manner mainly because the lack of a clustering policy.

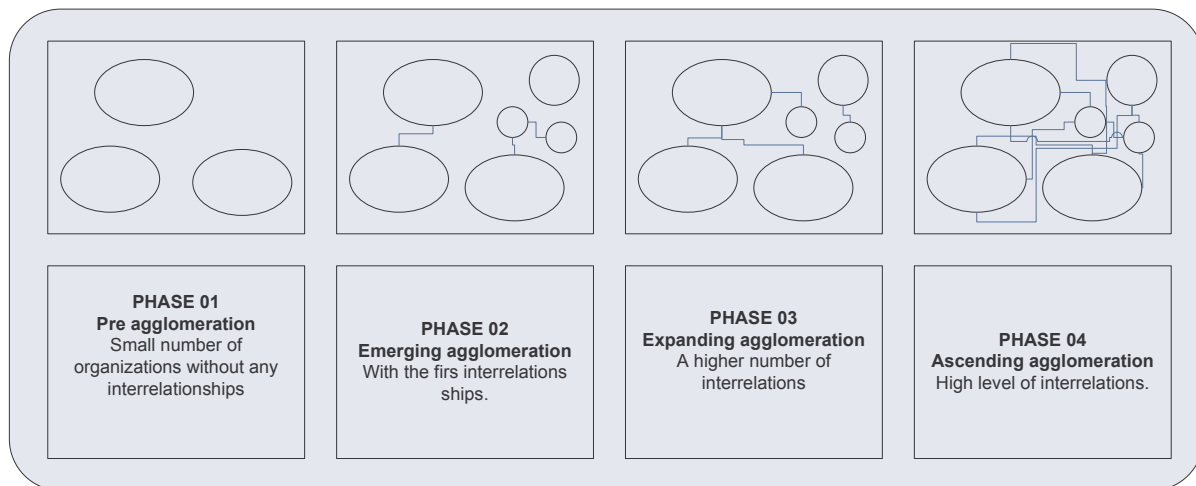


Illustration 1 – Phases of the evolution of a cluster

Source:
Adapted from Casarotto Filho, 2004

The interrelation process in the LPA is in a stage in that only the raw material suppliers are interlinked. The equipments production sector is in the initial phase of interrelation with the production sector. This sector is beginning the process of development of heavy equipments to supply the production needs of this area. The supply of heavy equipments and of high precision equipment is still supplied largely through imports.

LPA is intensity more developed in the production sector. It is in this area that the largest interrelations are observed among the organizations. The organizations that in initial phases accomplished the totality of the production are now modifying their processes. A segregation of the production process is happening in the LPA. Countless companies are only accomplishing the unfolding of the logs and the drying of the boards and reselling this material, that is possesses in a specific characteristics for the production of "clear blocks." Other organizations are acquiring the boards and transforming them in "clear blocks" and "blanks" and reselling them to the organizations that produce "mouldings."

The organizations that are specialized in the production of "mouldings" are in the top of the lumber LPA productive chain. They were formed due to the evolution of the needs in the import / export market.

With the evolution of the demands in the markets of the United States and Europe the local organizations shifted to the production only of "mouldings", due to the fact the aggregated value is larger and the cost/benefit relationship is of higher advantage. By this way larger organizations started to acquire "clear blocks " and "blanks" from smaller companies and these acquire the wood from companies specialized in unfolding and drying lumber.

The process of evolution of the LPA is motivated by globalization and demands a growth in scale of all the involved actors. Fragmentation of the production process in to various other companies is one of the greatest characteristics of the lumber LPA in this region.

Methodology

This article has as an initial start a literature revision of the points that made possible the chain reactions needed for the development of the interrelations among the actors involved in the local productive arrangement (LPA). This analysis made possible the identification of the current stage of lumber LPA in the area of Ponta Grossa and the Campos Gerais region.

Results and discussions

The Campos Gerais region in the State of Paraná (PR) at the southern portion of Brazil (figure 01) is constituted by twenty-four municipalities as seen in figure 02.



Figure -01 Brazil



Figure 02 Paraná State and the Campos Gerais Region (source UEPG)

In table 01 is a listing of the twenty-four municipalities that constitute the Campos Gerais region. This region is responsible for 27,49% of the total log production in the State of Paraná. The Campos Gerais region where the municipality of Ponta Grossa is located and in a radius of 200km from Ponta Grossa is also located the main log suppliers for the local lumber industry. In the field research, it was seen that the great majority of the medium and large producers export all their production to the European and North American consumer markets.

Municipality	Volume of cut logs (m ³)	Municipality	Volume of cut logs (m ³)
Arapoti	951,00	Ortigueira	2.500,00
Balsa Nova	0,00	Palmeira	22.000,00
Campo do Tenente	400.000,00	Piraí do Sul	600,00
Campo Largo	50.000,00	Ponta Grossa	2.810,00
Cândido de Abreu	977,00	Porto Amazonas	0,00
Carambeí	3.661,00	Reserva	0,00
Castro	2.771,00	Rio Negro	0,00
Imbau	0,00	São José da Boa Vista	70,00
Ipiranga	3.007,00	Teixeira Soares	23.300,00
Ivaí	4.885,00	Telêmaco Borba	0,00
Jaguariaíva	4.359,00	Tibagi	0,00
Lapa	0,00	Ventania	0,00
	Total Campos Gerais production		521.891,00
	Total State production		1.898.592,00

Table 01 - Log extraction in the Campos Gerais Region (source authors and Anuário Estatístico do Paraná - 2004)

With the field research it was identified a foundry that due to environmental regulations is now developing a charcoal supplying industry. This new industry will be producing charcoal that will supply the mother industries need. The charcoal industry will be producing only with residues from small and medium industries from the region.

The great majority of the lumber industries are linked to a local MDF production facility. This facility absorbs approximately 70% of the entire wood residue generated in the Ponta Grossa area. It was observed that the residue suppliers are very dependent if the MDF facility. This dependence is due to the need to find a destination for the residues produced. No parallel research is being developed in order to reduce or find new alternatives for the residue.

Another factor found was the lack of educational institutions involved in the development of an educational base in the lumber cluster. Only one educational organization has a program that teaches basic cabinetmaking. This organization is liked to a national industrial union.

One of the most elevated level of interaction among local industries was located 25km from the main industrial district of Ponta Grossa. The largest lumber industry in the area has implemented a cogeneration unit in its plant. This unit can supply 5MW of electricity with the use of approximately 8 tons of wood residue. To supply its electrical needs it uses approximately 1,6 MW, the resulting surplus of 6,4 MW is sold to two large capacity frigorific industries installed close to the facility. This lumber mill does not produce the entire residue necessary to supply its cogeneration process. The alternative found was to build a partnership network with smaller mills that now supply the cogeneration unit with the necessary residue at a competitive price. With this action two problems were solved, the need for biomass to run the cogeneration unit and the need to find a proper destination for the residue from the small mills, in order to follow environmental regulations.

The creation of a lumber databank to gather all the lumber companies information is suggested. This is due to the fact that during the field research no central information system was found. This lack of a central databank makes it extremely difficult for the evolution of the LPA. There is no governmental or industrial association that has a databank that makes it possible for the creation the interrelations necessary to develop the evolution to the next stages of the LPA.

Conclusion

This work observed that the structuring of a LPA benefits not only the key organizations involved. The benefits are distributed by the whole area, bringing an elevation in the level of the inhabitants' quality of life. The possibility of development of new organizations and of services providers due to the presence of a "critical mass" of interlinked organizations develops a collective efficiency due to the strong interactions among the agents. The incentive to the interaction and intra-organizational cooperation is developed through public and private institutions that maintain the dynamics of this interaction through politics.

The lack of politics that foment the interrelations among the agents is still a factor that needs to be developed for the regional lumber sector. The development of a policy for a union with a larger cohesion among university, fomentation institutions and industries would make possible the acceleration and solidification of this LPA, and this was not seen during the study. It is suggests for future studies an analyzes of the necessary policies for such acceleration and solidification in the region.

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