



**INTER-ORGANIZATIONAL RELATIONS FOR REGIONAL
DEVELOPMENT: THE CASE OF THE FEDERAL NETWORK OF
PROFESSIONAL EDUCATION, SCIENCE & TECHNOLOGY**

Cleudson Nogueira Dias

Empresa Brasileira de Pesquisa Agropecuária (Embrapa), Brazil

E-mail: cleudson_nogueira@yahoo.com.br

Flávio Manoel Coelho Borges Cardoso

Universidade de Brasília - UnB, Brazil

E-mail: flaviomanoel@hotmail.com

Valmir Emil Hoffmann

Universidade de Brasília - UnB, Brazil

E-mail: ehoffmann@unb.br

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ABSTRACT

This research paper examines the importance of inter-organizational network management as a government policy tool to promote regional development. This pattern requires Federal Government intervention so as to compensate for the imbalance that this causes and to guarantee that economic growth resulting from government actions leads to development in all regions of the country, thereby avoiding the traditional mechanisms of wealth concentration. For this, a methodology of content analysis was used based on a relevant public policy aimed at promoting development within Brazil and by analyzing the data collected in relation to the current theory related to strategy, local development and inter-organizational networks in general. The results show that, when the applied policy we had studied in this work, was implemented the networks had a positive influence on the outcome of the policy objectives and represented an extremely powerful support tool, being one of the most important factors to boost development.



Keywords: Strategy; Regional development; Inter-organizational networks; Territorial agglomerations; Federal Institutes of Science; Education & Technology.

1. INTRODUCTION

The lack of equal treatment that exists in the area of investments in different regions of Brazil, which in effect privileges some areas to the detriment of others, has meant that the process of development in Brazil has been unevenly distributed across the country. Regional inequalities have been accentuated and replicated within a cycle of impoverishment, resulting in the coexistence in the country regions of stagnating economies, and low levels of social welfare, alongside regions which are extremely dynamic in social-economic terms, thereby forming a pattern of social inequality and lack of opportunity.

Public bodies exist to promote local and regional development through a process of activities that encourage the creation of work activities and citizen emancipation in the view of development. The different types of development opportunities that exist in each sub-region of the country, which reflect the social, economic, environmental and cultural diversity of the country, form the basic material for regional policies. This means that these types of government policies act to minimize existing inequalities and make the most of the diversities and specific opportunities offered by each location.

Regard this theme, the Brazilian Ministry of Education (BME) is also involved in the process of intervention, from the moment that a specific public policy is formulated, to its implementation. For this, BME promotes development using an expansion policy created by the Federal Network of Professional Education, Science & Technology which, in addition to carrying out important field and extension research, also offers professional qualification and technical training courses, undergraduate education and graduate technical programs in accordance with regional demands around the country. This governmental agency has expanded – as the Federal Institute of Education, Science & Technology (FIES&T) – and one of its main aims is to provide encouragement and support to educational processes that generate employment, income and citizen emancipation within the perspective of local and regional social-economic development.



Given the above context, there is the problem that motivated this research: What is the importance of managing interorganizational networks, the implementation of public policies for regional and local development?

With regards to the methodological issues involved, it was decided to use a content analysis (BARDIN, 1997) as the scientific method to study the BME's policy to expand the Federal Institute of Education, Science & Technology. A content analysis was carried out using a semi-constructed questionnaire containing (closed and open) questions that were put to FIES&T CEOs.

One of the strategies used to reduce inequality is to promote activities in those territories that are less attractive to agents working in this field, by enhancing the value of local diversities. The focus of these policies is to fight income inequality across the country, resulting from the stagnation of economic activities. Reducing such inequalities helps construct a country that encompasses all its territorial regions and contributes towards creating new frontiers of expansion for the Brazilian economy.

2. THEORETICAL BACKGROUND

2.1. Social capital and local government

Robert Putnam, in an analysis he carried out in Italy – between 1970 and 1989, sought to understand the reasons why such inequalities occurred in the performance of the local governments of the northern and southern regions of the country, and that these inequalities led to the southern part of Italy being poorer while the northern region prospered and developed. Thanks to his work, it was possible to observe the effectiveness of regional governments, to demystify the reasons for different regional performances, and to understand the reasons for these differences, so that Italy could become an economically efficient country.

According to Valentim (2008), in his book, Putnam used the argument that civic traditions, the relationships of trust and cooperation play a far more decisive role than just good citizenship in promoting social economic development. In the case of Italy, cooperation resulting from mutual trust between individuals within a community led to strengthened social relationships, thereby consolidating formal institutions which enabled the Italian people to react more effectively to the challenges and opportunities of the 19th and 20th centuries.



Putnam (2006: 105) wrote that “one key indicator of civic sociability is the vibrancy of associative life”. According to this author, a civic community is characterized by the interest and participation shown by its members in public issues and in the collective welfare at the cost of all types of purely individual and private interests. This type of community will become even more civic when policies approximate the ideal of equal policies for all citizens who follow the rules of reciprocity and participate in government (PUTNAM, 2006). Also according to Putnam (2000: 132), the most important factor which explains the good performance of a government “is to what extent the social and political life of a region approximates the ideal of a civic community”.

In this sense, Putnam (2006) observes that some regions of Italy are favored by dynamic patterns and systems of civil engagement that have the capacity to foster the presence of an efficient and responsible form of government. However, other regions of the country suffer because the lives of their communities are characterized by fragmentation, isolation, by vertical politics and by a culture that is dominated by distrust.

The author further states that, over the course of history, patterns and systems of civic participation promoted rather than inhibited economic growth. The regions with civic communities had a faster growth rate than those regions with fewer associations and a greater level of hierarchy, which excluded these from achieving higher levels of development (PUTNAM, 2006). Similarly, there is a strong correlation between civic associations and efficient public institutions. “In modern day Italy, the civic community is closely linked with social and economic levels of development. Generally speaking, those regions that are now civic are also prosperous, industrialized and have good systems of sanitation” (PUTNAM, 2006; 162).

In the same vein, according to Franco (2004: 235),

“Of all that is said or has been said about this matter, only one essential feature should be noted: social capital is the same as a social network. Social networks are, in essence, the multiple paths that exist between individuals and groups. However, social capital refers to the movable configuration of internal connections within a collective group of human beings, including not only their morphology, but also their ‘metabolism’ which seems to be one of its characteristics (or at least, a possible one). In other words: democracy. Thus, social capital is not an economic concept (as the word ‘capital’ suggests), nor sociological (as the term ‘social’ might suggest). It is a political concept that has to do with standards of organization and how methods of regulation are practiced by a social group’.



According to Soto (2008: 393), “there exists a certain consensus for defining social capital as the ability that a community has to build networks of social cooperation based on interpersonal trust, with the main purpose of producing collective goods that represent economic prosperity and sustainable development”.

In addition to these concepts, Putman’s study (2006) includes part of the current concept of social capital and shows the influence this has had on economic development. “Social capital has to do with the characteristics of the social organization, including trust, standards and systems that help increase the efficiency of that society, making it easier to coordinate actions”. (PUTNAM, 2006: 177). In other words, when social capital exists in a region, there is a greater possibility of taking collaborative actions that bring benefits to the whole community.

Putnam and Goss (2002) further state that social capital is “a concept that takes into account cultural characteristics, such as existing trust, reciprocity and solidarity within a civil society, which are vital elements to strengthen democracy, communities, people and even political society, the State” (apud PASE; SANTOS, 2008: 45).

In this way, local and regional development is directly linked to the characteristics of the social organization and the civic relationships found in the region. Based on these assumptions, it should be noted that empirical studies carried out in Europe and in Latin America have provided the matrix for the most widely diffused ideas in relation to social capital concepts.

2.2. The Dynamics of Territorial Networks

According to the National Policy of Regional Development – NPRD - publication (*Política Nacional de Desenvolvimento Regional*, 2003), recent world development has given a renewed boost to the centralization forces of urban articulation, which demonstrates the prevailing spatial logic of an economic system that has become far more internationalized.

The trend towards concentrating means of production and the work force in certain points of the territory is motivated by circumstances that begin to impose themselves on the dynamics of the market and on public policies. In the present situation, private sector decisions have become more accentuated, especially with the move by major international conglomerates to become increasingly



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internationalized, easier financing and the restructuring of the productive sector, all of which are at the root of so-called “globalization”. As a result, social and regional inequalities were intensified, increasing the need to propose new policies that were capable of alleviating those negative effects and to reaffirm the social and territorial cohesion of the nations and their regional districts.

In this climate, the less developed nations tended to face greater difficulties, since the major groups of capital and corporations that represent them gained freedom of movement and structured themselves so as to be able to move rapidly to the most distant corners of the earth, using national territories as mere platforms for their operations. These countries have none of the tools needed to extract greater concessions from those corporations which are operating in their territories since – as a result of re-instated rules of “good social and economic conduct” – they are unable to regulate the flow of movement that mobilizes global networks. In these circumstances, development tends to privilege certain locations, while disqualifying or discarding other areas, often taking into greater account the interests of corporations rather than those of the nations and populations concerned (GOMES, 2004).

According to Santos (2006), one of the characteristics of today’s world is the demand for fluidity when exchanging messages, ideas, products or money, which is of interest to homogenous actors. Current fluidity is based on technical networks that are one of the pillars that support competitiveness.

Vieira and Vieira (2007) wrote that fluxes that are produced internally within the spatial system lead to the establishment of networks of productive relationships and demographic expansion. The productive spatial system, supported by a physical-environmental structure that, during the different stages of economic development, created standards of production of a systematic structure and, consequently, established cross-flows between us. In relation to this matter.

The direction of the fluxes, inter-related to production and consumption, have determined, in local, regional, national and international dimensions the organization with convenient link systems (...) a fact which has been generated within a territorial dimension and redistributed to another, which produces a new fact and returns to the previous territorial dimension which generates a new line of fluxes, forming an image of the networks (VIEIRA; VIEIRA, 2007:39).



In this same context, Santos (2006), therefore, argues that the territory has become a stage for a conflict of interests that in these localities, in the context of globalization, materializes as a confrontation between local and global space. To understand the dimension of a socially organized space, it is important to make a distinction between space and territory. Albuquerque-Llorens (2001) highlights the concept of space as a geographic support in which social-economic activities develop. In this sense, this usually implicitly suggests an idea of homogeneity, in such a way that the fundamental related preoccupations involve distance, transport costs, the agglomeration of activities or the polarization of growth. However, based on the perspective of local and regional development, we are basically interested in another very different type of concept, whichever it is, that concerns territory, understands the heterogeneity and complexity of the real world, their specific environmental characteristics, social actors and their mobilization around various strategies and projects, as well as the existence and access to strategic resources for productive and business development.

For Sepúlveda (2005), this focus on a territorial dimension defines the unit of analysis, the planning and action needed for sustainable micro-regional development. The area of operation is converted into a territorial scenario where social relations are processed and economics are historically determined and the frontiers of which are easily recognizable. The territorial unit presents a certain degree of homogeneity from the point of view of both its potential and limitations, which can be ecological and productive as well as social and institutional. This perspective represents an appropriate scenario to allocate resources that promote the multi-dimensional transformation thereof.

For this type of process for territorial development, the networks are configured as one of the central pillars and, according to Santos (2006), if we compare the networks of the past with those of the present days, the great difference between them is the relative portion of spontaneity that exists in their respective elaboration. The further material civilization advances, the more a deliberative character is imposed on the constitution of networks.

It is worth remembering that, in the Arrangements Glossary, productive systems and local innovativeness, taken from the Network Research into Local



Systems published by the Federal University of Rio de Janeiro (REDE DE PESQUISA EM SISTEMAS LOCAIS DA UFRJ, 2003:23), business networks refer to “the inter-organization arrangements based on systematic links” [...]. These networks can be related to different links of a particular productive chain (which form supplier-producer-user networks), as well as being linked to different spatial dimensions”.

The growth range and complexity of our social and economic challenges are becoming too overwhelming for the institutional and economic capacities of organizations to handle on their own. In this sense, cooperation emerges as an area that represents new possibilities. No isolated unit has all the necessary elements to efficiently deal with an identified social need. As mentioned earlier, clusters or local productive arrangements (LPAs), strategic partnerships, industrial districts, scientific hubs and parks, innovative *milieu*, consortiums, forums and other variations are among the main articulators for organizations on a territorial dimension.

Yoguel, Novick and Martin (2001) “refer to sets of inter-related agents (clusters, local systems or *milieu*) as found in literature related to new forms of productive systems organization and propose the idea of a productive scheme, that is to say, articulation between development actors, innovative activities and social management techniques” (apud FISCHER; MELO, 2004: 19-20).

For Fischer and Melo (2004), the most recent term for productive schemes is “LPA”. In this way, productive arrangements are encouraged in federal, state and municipal environments as the most appropriate method for managing territorial development, and territories are sub-divided as LPAs.

As may be seen, spatial arrangements do not only occur as a set of continual points; these can also be constellations of discontinuous points – which are also interlinked – that define an area of regulating fluxes. Santos (2006) proposes that the segmentation and partitions present in an area suggest at least two sub-divisions: vertical and horizontal.

Vertical sub-divisions represent points in space which, separated from one another, affect global operations and are vectors of a superior rationality and of a pragmatic discourse between hegemonic sectors, creating an obedient and disciplined way of life. The horizontal sub-divisions are for extensions formed by points which group together in an unbroken pattern; that is to say – in accordance



with the traditional definition of a region – these are as much about the place of purpose imposed from outside, from a distance and from above, as the counter purpose, generated locally (SANTOS, 2006).

All society is characterized by both formal and informal systems of inter-personal interchange and communication. “Some of these systems are basically horizontal, bringing together agents that have the same status and the same power. Others are essentially vertical, bringing together unequal agents in asymmetrical relations of hierarchy and dependence” (PUTNAM, 2006: 182-183). Thus, according to Putnam, a horizontal format is understood to be those organization that give rise to cooperatives, clubs, societies of mutual assistance, cultural associations, unions; in short, organizations that are devoid of rigid hierarchies and rules. The advantage of horizontal organizations in relation to vertical ones is that the former create networks of solidarity and develop generalized relationships of reciprocity, making spontaneous cooperation easier and creating an antidote to attempt of special interested groups and opportunism, which generate limited and asymmetrical reciprocity.

Thus, according to Fleury and Ouverney (2007), such a diversity of local actors is also beginning to influence the political process, which signals the emergence of a polycentric society where distinct articulation nucleus are organized and which, in turn, tend to alter the vertical nexus between State and society – based on rules and subordination -, so as to establish more horizontal relationships that favor territorial diversity and dialogue.

2.3. Methodological aspects

The research method adopted for this survey was a content analysis (BARDIN, 1977), that is based on statistical and interpretative procedures. According to Vergara (2006), a content analysis consists of three basic stages: (a) pre-analysis; (b) examination of material; (c) treatment and interpretation of data. The pre-analysis refers to the selection of material and deciding which procedures to follow. The examination of material refers to the implementation of these procedures. Treatment and interpretation, for their part, refer to inferences being allowed to be made about the results of the investigation.



With regards to types of research, it was decided to base the present abstract on the taxonomy put forward by Vergara (2007), which is characterized by the fact that it classifies different types of research from the perspective of the purpose of the research work, as well as which investigative methods have been employed. With regards the methods employed, this research was of a bibliographic nature, since it used information contained in books and other technical and academic publications, as well as documental, since it made use of in-house data from a public body, such as records, newsletters, official correspondence, memorandums and reports, that are not accessible to the general public.

With regards to the aims of this survey, the research will be descriptive and applied. It has been classified as descriptive research since it aims to highlight the importance of inter-organizational networks as an instrument for regional development. This is termed as applied research since it aims to associate territorial development, studied in theory by authors who are renowned for their authority on the subject, with concrete situations in a given and actual work situation.

A content analysis allows for quantitative and well as qualitative approaches to be made, or even both. Thus, a semi-structured questionnaire was used, containing (closed and open) questions which, after exhaustive examination, made it possible to identify the central ideas contained in the replies to the open question (the last), so as to classify these according to their type of nuclei which articulate the different categories of ideas.

Taking part in this overall aims of this research were the management body of the Federal Institutes of Education, Science & Technology who, together with some 300 university campuses located in all areas of the country, and 41 (forty-one) director generals (CEOs), representing five (05) macro-regions of Brazil, responded to the questionnaire prepared by this research project.

2.4. Results and discussion

Forty-one (41) general directors (CEOs) from over 300 university campuses responded to this survey. The first question was if the director general believed that the Federal Institutes are actually managing to “encourage and support educational processes that lead to the generation of employment and income and to the emancipation of local citizens from the perspective of local and regional social-



economic development”, in accordance with the terms of objective V of the act that established Law 11.892/2008, article 7. In reply, it was noted that every one of them responded in the affirmative.

The second question was why the directors believed that the expansion of the ‘Federal Network of Professional, Scientific & Technological Education’ is a public policy that promotes local and regional development. In the case of a negative reply, the respondent was asked to explain why the Federal Network had been unable to promote development.

The analysis showed that it is possible to condense some of the answers, emphasizing that the following represent the main motivational elements given by respondents that led to the conclusions reached by this survey: the professional qualifications of a person living in the interior, the generation of employment and income within the territory; strengthening the LPAs by means of an personal qualifications; the implantation of a campus, which is attracting many businesses to the area; focus on the potential/production of the region; management decentralization; meeting local and regional needs; research and extension activities that apply or innovate technology; a satisfactory infrastructure; establishing economic activities in regions of the interior; and promoting social inclusion. These responses were expressed in many ways, as shown by the following:

[...] In addition, if research and extension activities exist in an area, either on their own or in cooperation with another institution, this will promote regional development, either through applied or innovative technology.

Because this opens up opportunities for people in the areas where they live. Many companies establish themselves in the region in the expectation that they will be able to find qualified people in the area.

Because this makes it possible to meet regional demands and aspirations with greater specificity and contextual relevance. Also because this makes it easier for students in the interior to have access and contact with social actors and local businesses.

Precisely because these offer professional technical training courses, as well as higher education and even post-graduation courses for people living in the area. As a result of the activities of the Federal Institutes, the local productive arrangements also gain a valuable and qualified local workforce as a result of the professional training provided for local youngsters, who can continue to live in the area, although with a new perspective in life.

[...] In addition, the implantation of training courses should be associated with the local productive arrangements (LPAs), so that training local people becomes a priority. (...)

[...] The installation of campuses in areas of the interior is extremely important, since the local productive arrangements are given a boost by the



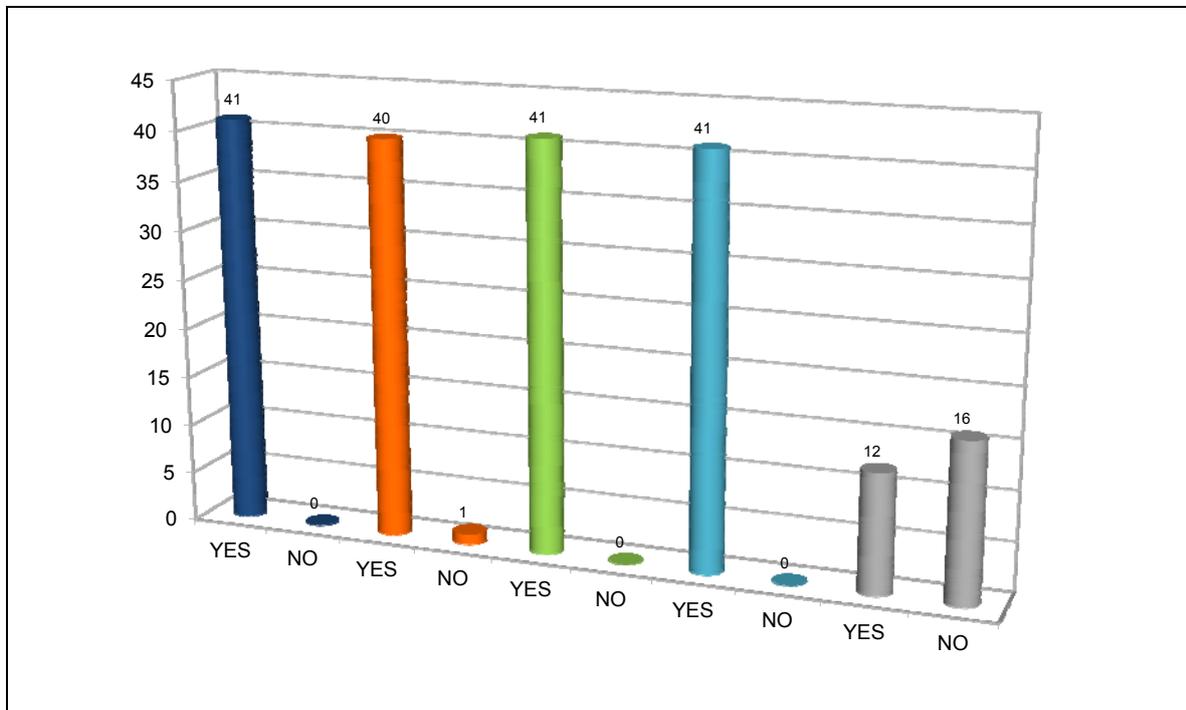
arrival of professionally trained personnel, something that has never happened before. In addition, the quality offered by state education will meet the needs of the more underprivileged communities at all levels.

This has been caused mainly by the decentralization of a Federal Institute from the great urban centers, which will thereby meet the needs of more distant regions.

The move by federal education institutions to regions of the interior, not only increases access opportunities for members of the population who are studying for their qualifications, but also stimulates processes of economic development since, once you have a qualified work force, these act as an inductor for the economy by altering the local context of regional economic agents.

With regards to the third question, which refers to the most important factors that stimulate local and regional development, some variables were proposed, as indicated in the captions below. Graph 1 shows that all the factors researched were unanimously quoted as being among the main instigators for local and regional development.

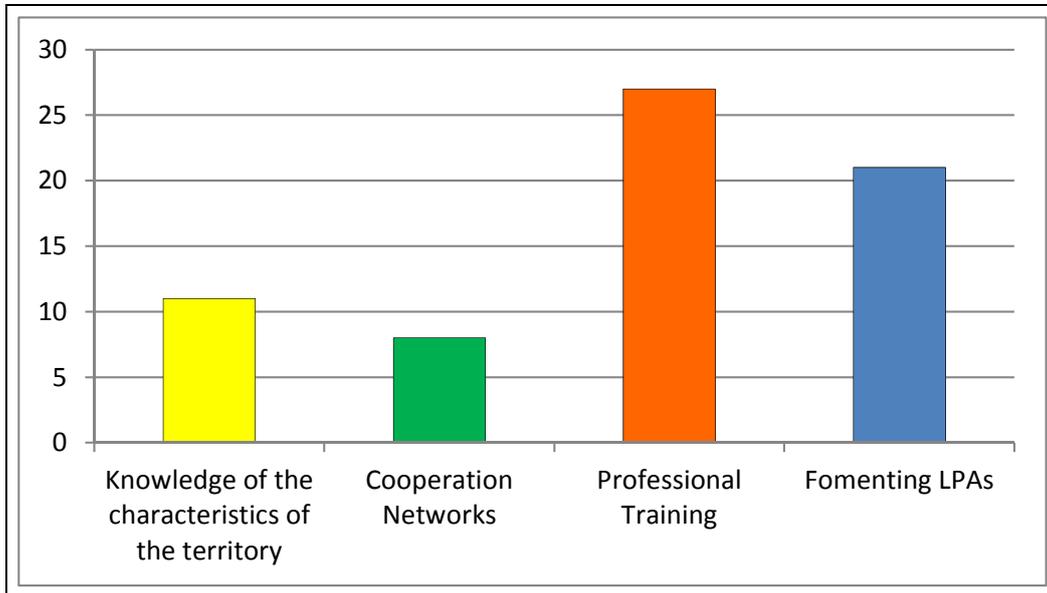
- Knowledge of the characteristics of the territory;
- Cooperation networks between organizations;
- Professional training;
- Stimulating Local Productive Arrangements (LPAs/APLs);
- Do you wish to highlight any other factor(s)?



Graph 1: Factors that stimulate development

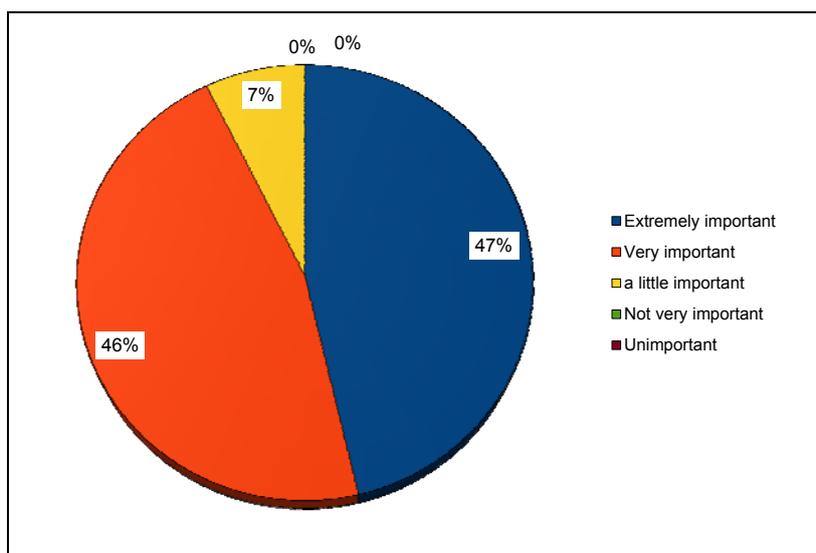


In the following question (number 4), the CEOs had to choose only the two main factors that they thought simulated local and regional development, as shown in Graph 2.



Graph 2: Prioritization factors

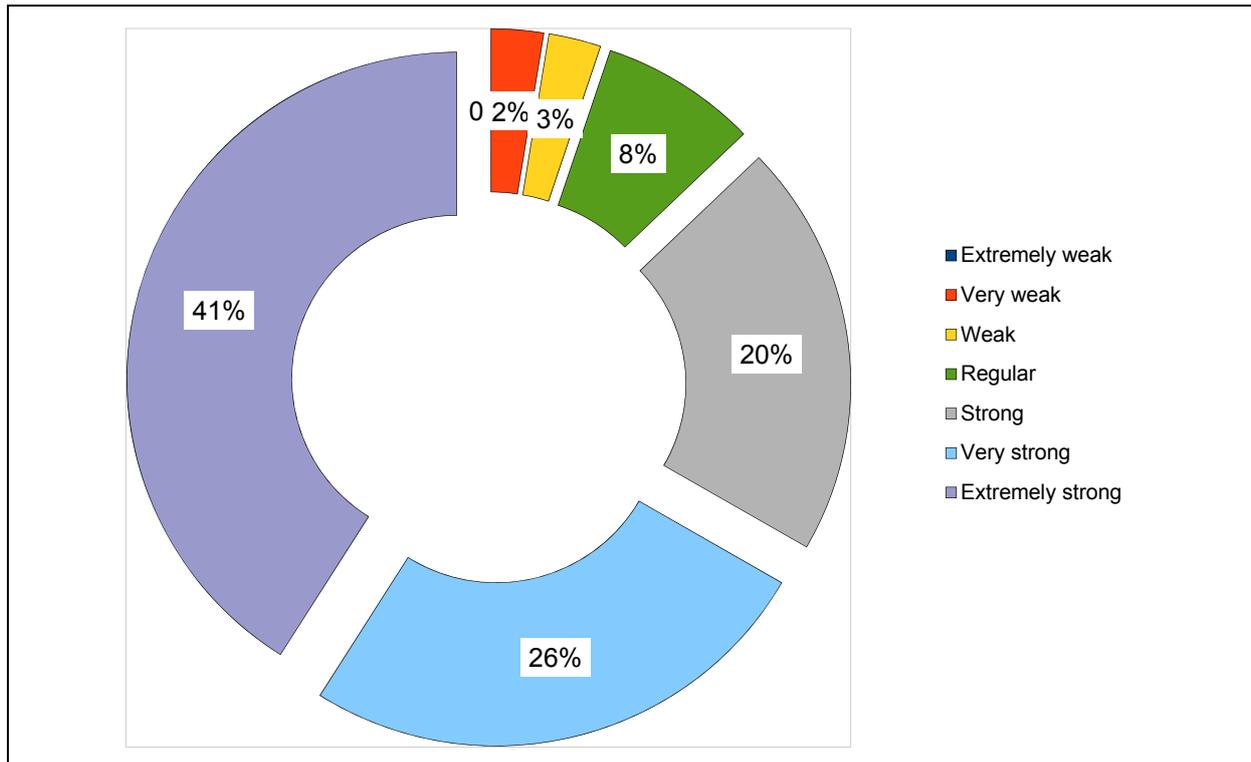
On a scale of importance, the CEOs gave their opinions about the value of alliances, partnerships and inter-organizational relationships for regional development in Brazil. The results showed that 47% of the respondents thought this was extremely important and 46% said it was very important; in other words, 93% of the director generals questioned said that inter-organizational network management was an essential factor for the country's development.



Graph 3: Scale showing the importance of networks



Question 06 consisted of asking the CEOs to evaluate “network management” as a support tool for the implementation of public policies aimed at generating employment, income and citizen emancipation, the respondent marking an ‘X’ on one of the seven options, on a scale of 01 to 07. In order to make the visualization of this Graph 3 easier to understand, the caption was converted into a nominal scale of the perceived impacts of this support tool.



Graph 4: Perceived impacts of networks as a support tool

With regards to Graph 4, it is striking that 40% of the CEOs gave a rating of 7 (extremely strong) to the issue of network management as a support tool and its capacity to sponsor public policy implementation. If we add up all the directors who gave this question a rating of strong, very strong and extremely strong (ratings 5, 6 and 7 respectively), this would give a total value of 86% of all those questioned.

The last question, number 07, asks what lessons can be extracted from the policy implementation process to expand Federal Institutes – taking into account regional development – and what recommendations could be made for the future expansion of projects or programs of this nature.

The Institute directors suggested various points and recommendations, the main ideas being as follows:



- a) Professional training to be given to technicians and actors who participate in the hearings that decide the appropriate courses to be offered;
- b) Decentralized and democratic administration in accordance with the demands of the local community;
- c) Guaranteed access to education by low-income members of the population as well as the promise of development, observing the characteristics of each location;
- d) Offer courses observing the LPAs;
- e) Use criterion, social-economic techniques and not only politics to define the new expansion phase of the network;
- f) Prepare university rectors, deans, directors, administrative personal, local mayors, municipal secretaries and even civil society entities so that they understand and work to attain the social issue proposals embodied by the objectives outlined by the federal institutes;
- g) Ensure that investments are provided for research scholarships in areas of technological and social development;
- h) Coexistence strategies for new members of staff on the campuses where they are being allotted, so that new government employees, many of whom will be coming from other regions of the country, can be helped to “settle into life” in the interior of Brazil;
- i) Offer training, capacity-building and professional qualifications to meet local demands, as well as helping and/or promoting the development of new technologies;
- j) Guarantee that existing schools be given the necessary infrastructure to develop good work habits;
- k) When gathering together director-generals for the collaborative process of jointly providing training/capacity building, ensure that the potential of acting as part of a network is clearly explained and understood. Stimulate this process on different levels within the Federal Institutes, applying these same



forms of encouragement to other institutions also, as these will produce long-lasting results for the administration;

- l) It is essential that the characteristics of the place where the institute is to be located are observed;
- m) Lessons worth remembering: broaden opportunities; provide professional capacity building; encourage joint efforts; prepare students to work and not just for the job market; establish an entrepreneurial spirit;
- n) Recommendations: take care to cultivate links between the campuses and the Rector of the Federal Institutes especially in view of their territorial proximity;
- o) Ensure that alliance management is used as the main engine to strengthen the institutes, so as to maximize the outreach potential of public policies;
- p) The teaching method adopted by the majority of Federal Institutes has been post middle school technical courses. In our experience, it is very complicated to work with these students (who have very heterogeneous levels of education). The ideal would be to adopt a technology-integrated teaching method (middle and technical teaching combined), with a four-year training period; and
- q) Broaden the scope of social outreach actions/or projects, especially in areas of education, training a professional labor force and their insertion into the job market and/or economy, with the purpose of providing opportunities for the working classes and those segments of society that historically have been marginalized.

3. CONCLUSIONS

Network participation makes it possible for individuals or businesses to benefit from their social capital. The impact of forming business networks in the economy of the region is felt from the moment that these begin to reorganize themselves on a major scale, by building relationships between networks already active in the market, bearing in mind that the results of this type of interaction are associated with the existence of social capital.

Thus, the aim of this research work was to study the importance of inter-organizational network management as a government policy tool to generate



employment and income. From the viewpoint of the system into which the network is inserted, establishing the means to form cooperative partnerships makes it possible to construct democratic governance involving actors from different areas, thereby creating new dynamics of social coordination that are very different from the traditional forms of hierarchies and markets.

The main conclusions reached in this research work was that forming inter-organizational networks when implementing public policies, helps to achieve positive results for local and regional development. To quote Fleury and Ouverney (2007), the dynamics of shared relationships of power through formalized channels of cooperation transform a situation of inter-dependence into a fundamental relationship to construct and strengthen democratic governance. This makes the network a social arrangement model that is capable of expanding the potential of the State, both with regards to the effective outcome of public polices, as well as with regards to policy coordination.

It is up to the State to play an important role in coordinating economic decisions, in regulating markets and public services, providing basic social services and developing the less privileged regions of the country. These responsibilities would be far better performed if they were planned with the cooperation of civil society. Furthermore, the planning process tends to be far more effective at a local level, considering the proximity of the problems to be resolved and the representativeness of the actors involved.

Soon, institutions and public policies will no longer be sustainable if they do not have the vision to go beyond their present barriers. They need to look ahead and discover partners that can help them achieve greater and more effective results. The tendency, therefore, is for the processes of articulation and cooperation between institutions and the State, community organizations and sectors of the market, to grow in strategic importance.

The limitations of this research study should be mentioned as follows: (i) the possibility that answers to the survey may not describe the real opinions of the respondents for conscientious reasons (fear, for example) or unconscious reasons. Some respondents may also have been wary of the real purpose of the research. However, all efforts were made to neutralize these possibilities by providing the



respondents with a full explanatory introduction about the objectives of the study even before the questionnaires were used; (ii) since a large number of the Federal Institute campuses have only recently been implanted, the declarations given by the majority of the CEOs were related more to their experiences in campuses where they had worked previously, rather than to the present one; and (iii) another limitation was the constant exchange of e-mails from top management personnel at the Federal Institutes, as was confirmed after consulting the official BME website, which meant that most of the e-mails that were sent were returned. In order to overcome this limiting factor, we were sent a notice to the effect that: "the director-generals are taking part in a public management specialization course at the National School of Public Administration (ENAP in Portuguese), in the Federal District of Brasilia". Each group consisted of 50 people; so, our researcher went to ENAP and spoke to the CEOs belonging to groups 3 and 4, as well as being given access to a list of the personal e-mail addresses for the directors taking part in group 2. This made it possible to confirm that the research questionnaires were received by a representative number of directors.

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