https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

Factor Analysis Applied in the Construction of the Socio-Environmental Performance Index (IDRSA) in the Guajará-Mirim Free Trade Area, Brazil / Bolivia Border

Carlos Alberto Paraguassu-Chaves[1], Fabio Robson Casara Cavalcante[2], Allan Kardec Duailibe Barros Filho[3], Fabrício Moraes de Almeida[4], Lenita Rodrigues Moreira Dantas[5], Carlos de Andrade Macieira[6], João Viana Fonseca Neto[7], Charlles da Silva Barata[8], Sorin Melgar Maciel Siqueira[9], Ana Maria Morais da Fonseca Cavalcante[10], Edmundo Machado Netto[11]

[1]PhD in Health Science – University of Brasília – UnB, Brazil; Post-Doctor in Health Sciences – UnB and Degli Studi D'Aquila University – IT. Professor at the Federal University of Maranhão, Brazil. E-mail: Carlos.paraguassu@gmail.com
[2]PhD in Sciences: Socio-environmental development - NAEA / UFPA. Professor at the Federal University of Rondônia – UNIR, Brazil.
[3]PhD in Information Engineering. Universidade de Nagoya – Japan; Post-Doctor. The Institute of Physics and Chemistry (RIKEN), Japan. Professor at the Federal University of Maranhão, Brazil.
[4]PhD in Physics (UFC), with post-doctorate in Scientific Regional Development (DCR/CNPq). Researcher of the Doctoral and Master Program in Regional Development and Environment (PGDRA/UNIR). Leader of line 2 - Technological and Systemic Development, and Researcher of GEITEC ― Federal University of Rondônia, Brazil.
[5]Graduated and Specialist in Geography. Graduated in Law. Researcher at the Higher Institute of Health Sciences and Environment of the Amazon – AICSA.
[6]Graduated in Medicine - Federal University of Maranhão. Nephrologist at the University Hospital at the Federal University of Maranhão, Brazil.
[7]PhD in Electrica Engineering. Federal University of Paraíba, Brazil. Professor at the Federal University of Maranhão, Brazil.
[8]Master in Geography - Federal University of Rondônia. Researcher at the Higher Institute of Health Sciences and Environment of the Amazon – AICSA.
[9]Graduated in the Environmental Management Course. Federal University of Rondônia, Brazil.
[10]Master in Agronomy - Federal University of Pernambuco (UFPE). Researcher of the Institute of Health Sciences and the Amazon environment - AICSA.
[11]Master in Regional Development and Environment - Federal University of Rondônia (UNIR), Brazil. Researcher of the Institute of Health Sciences and the Amazon environment - AICSA.

Abstract— *Objective: to analyze the socio-environmental responsibility of commercial companies in the wholesale, retail, wholesale-retail and wholesale-retail sectors within the scope of the free trade area of Guajará-Mirim, Rondônia, Brazil / Bolivia border. Method: the Social and Environmental Responsibility Performance Index - IDRSA was calculated according to the Factor Analysis techniques presented by Hair et al 13, Santana 14,15 and Cavalcante 16. A questionnaire (created by Cavalcante and Siqueira 17) was applied to 32 companies in the ALCGM economic sector, based on a set of social, environmental, economic and free question variables. Results:The average of the results found for each of the analyzed parameters (social, environmental and economic) reaches the performance index of socio-environmental responsibility of the companies for each of the economic sectors surveyed in the free trade area of Guajará-Mirim. The wholesale-retail sector had the best performance among all sectors with an index (IDRSA 0.561), considered "regular" performance. The sector of retail and wholesale (IDRSA 0.470) and the retail sector (IDRSA 0.420) also display rankings with regular performance indexes. The wholesale sector (IDRSA 0.374) was classified as "bad". Final considerations: Although ALCGM emerged from a policy framed in the context of endogenous development theory, motivated by local forces or by interests of strategic economic sectors, benefited by tax incentives, revealed weakness in socio-environmental*

https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

aspects. What is expected is to contribute so that socio-environmental responsibility is defined and demanded as policies and practices in the companies that make up the ALCGM.

***Keywords*— Social and Environmental Responsibility. Free Trade Area.Factor analysis. Guajará-Mirim. Brazil / Bolivia border.**

I. INTRODUCTION

Corporate social responsibility has been a topic debated and propagated by the global and Brazilian media and has acquired importance in a company's business strategies. Society no longer accepts that companies provide only quality, price and compliance with legislation; increasingly values companies that promote socio-environmental action practices [1]. In the contemporary world, consumers have a negative view of industries, considering degrading companies of natural resources and, consequently, also responsible for the increase of world poverty. To soften this view, many companies use marketing to sell their products, claim to be companies that manufacture their products in an environmentally and socially correct way[1].

With the sustainable development paradigm in the early 1980s, while organizations refined their purely economic views through strategic adjustments related to environmental pressures and ever-changing social transformations [2].Sousa [3], reports that, over time, socio-environmental requirements have been increasing and currently companies that do not meet them may be precipitating their exit from the market. It is necessary to assess how organizations can and should position themselves in a society that is increasingly demanding and aware of the issues that companies have in relation to the economy, the environment and society itself. In this context, it is essential that companies plan their strategies to take advantage of the opportunities they present and reduce the risks that all changes bring.

According to Senhoras, Takeuchi [4], socially responsible companies are better prepared to guarantee business sustainability, as they are synchronized with new dynamics that affect society and the business world. Bush [1], corroborates this view and includes the incorporation of socio-environmental variables as a business strategy that is necessary to guarantee the survival of companies in the competitive market of the contemporary world. According to Barbieri [5], the most demanding investors consider environmental issues in their questions, as they know what environmental liabilities are among the main factors that can cause damage to companies and company assets. The issues related to socio-environmental responsibility are global and, depending on the context, their understanding by companies and other institutions can happen in different ways, taking into account the impacts and influences of the economic, social and environmental challenges to be faced, and international and national standards adopted as a reference for development in different countries [6].

According to Jamali [7], the responsibility for managing relations in relation to the environment and society has gradually evolved in theoretical and practical terms, since companies start to compose their analyzes under the assessment of the traditional economic function that uses (production, jobs, growth), but with the prerogative to observe and guarantee environmental conservation and consideration of the social impacts and well-being of human beings. Ethos [8] defines Corporate Social Responsibility as a form of management that defines the company's ethical and transparent relationship with all the audiences with which it relates and the establishment of goals applied to the sustainable development of society, preserving environmental resources and cultural for the future, respecting diversity and promoting the reduction of social inequalities.

According to Srour [9], social responsibility can be defined as an attempt to reconcile the interests and requirements of organizations and different stakeholders, referring to organizational citizenship, with regard to organizational citizenship, internally and externally in the implementation of social rights. Companies must be jointly responsible for solving social and environmental problems, as they have political power and the ability to mobilize financial and technological resources to develop actions that can be replicated by other social actors [10]. According to Dias [11], socio-environmental problems can only be solved with the help of everyone, especially companies, who play an intrinsic role in this process.

The issue of Social Responsibility, therefore, goes beyond the company's legal posture, philanthropic practice or community support. It means a change in attitude, from a business management perspective with a focus on adding value for all. Within this scope, one can see which are the two necessary complementary characteristics or the concept of Social Responsibility. On the one hand, it can be perceived as an instrument for managing and expanding the company, helping to make its image, product and brand recognized, its stakeholders and the community. On the other hand, it also means a form of exercise of citizenship and ethics by companies and, consequently, by their employees, as agents of development in the regions in which they operate [4].The relationship between companies and their stakeholders must be considered as a two-way

https://dx.doi.org/10.22161/ijaers.74.40 ISSN: 2349-6495(P) | 2456-1908(O)

street, in which companies influence and are influenced by social agents. If, on the one hand, companies can be driven to change the way they manage their business, companies can contribute to the dissemination of management practices of customer and consumer management practices, on the other hand and suppliers adopt the concepts of Sustainable Development Corporate Environmental and Social [3].

Senhoras, Takeuchi [4] highlighted that the relationships built with internal and external audiences, formed the needs and interests, generated value for all stakeholders and guaranteed the long-term sustainability of the business, as they are synchronized with the new dynamics that affect the society and the business world. This involvement of the organization in the practice of social responsibility generates synergies, precisely with the publics on which the company depends, creating items of social responsibility throughout the productive and social structure, strengthening, as well as its microeconomic performance and local macroeconomic structure.

In the reality of the Amazon, free trade areas must be examples of socio-environmental responsibility, such as the Guajará-Mirim free trade area (ALCGM), in Rondônia, on the Brazil / Bolivia border. The Guajará-Mirim Free Trade Area began in 1991, with the publication of Law No. 8.210, of July 19, whose objective was to create an import and export free trade area, under the special tax regime with the use the promotion of the border region of Guajará-Mirim and increase bilateral relations with neighboring countries, according to the Latin American integration policy. This institutional device was regulated by Decree nº 843, of June 23, 1993, under the direct administration of the Manaus Free Trade Zone Superintendence (SUFRAMA) and in the same criteria as the Manaus Free Trade Zone.

In this perspective, Perroux [12] shows that the development of a pole region leads to the development of secondary activities in other regions. According to Perroux [12], the growth and development of a set of territories and populations will be achieved through the conscious organization of the means of propagating the effects of the development pole. It is the bodies of general interest that transform the growth of an industry or activity in the growth of a nation in the process of formation and anarchic developments in orderly development.

In view of the above, the present research was structured from the perspective of the ALCGM, having been motivated by the local peculiarities that ended up conducting a policy of fiscal incentives for a region of Rondônia's Amazonian border. For that, it became necessary to elaborate some epistemological questions of the research: a) what is the level of perception of socioenvironmental responsibility of the various economic sectors surveyed at ALCGM? b) is this scenario in line with the assumptions by which ALCGM must accept regarding socio-environmental aspects? In view of the above, it was established as a research objective to analyze the socio-environmental responsibility of commercial companies in the wholesale, retail, wholesale-retail and wholesale-retail sectors within the scope of the free trade area of Guajará-Mirim, Rondônia, Brazil / Bolivia border.

II. METHODS

The research was structured based on aspects of interdisciplinary research, given the complexity around the theme. This is a hypothetical-deductive study. Tables and graphs were constructed using SPSS, version 22, based on the primary research data. The Social and Environmental Responsibility Performance Index - IDRSA was calculated according to the Factor Analysis techniques presented by Hair *et al*[13], Santana[14,15] and Cavalcante [16]. The statistical tool SPSS (Statistical Package for the Social Sciences) was used, which enabled the application of mathematical knowledge and allowed the construction of IDRSA based on the results of the questionnaire created by Cavalcante and Siqueira [17] and applied in 32 companies in the sectors economic wholesale, retail, wholesale-retail and wholesale-retail assets of the Free Trade Area (ALCGM) of Guajará-Mirim, Brazil, on the border with the Republic of Bolivia from a set of social, environmental and economic issues.

2.1 Analytical Research Model

Method: Construction method of Social and Environmental Responsibility Performance Index - (IDRSA).

The method used in this study followed the logic of factorial analysis, which can be seen in the matrix form as in Dillon and Goldstein[18]:

$$X\=\alpha F\+\varepsilon \; X\=\alpha F\+\varepsilon \quad (1)$$

Then:

X = is the p-dimensional vector transposed from observable variables, denoted by $X = (x_1, x_2,..., x_p)$;

F = is the q-dimensional vector transposed from non-observable variables or latent variables called common factors, denoted by $F = (f_1, f_2,..., f_q)$, where $q < P$;

ε = is the p-dimensional vector transposed from random variables or unique factors, denoted by $\varepsilon = (e_1, e_2,..., e_p)$;

https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

α = is the array (p, q) of unknown constants, called factorials loads.

According to Gama *et al*[19], Santana[20], in the factorial analysis model it is assumed that specific factors are orthogonal, among themselves, with all common factors. Normally, E (ε) = E (*F*) = 0 and Cov (ε, F) = 0.

According to the authors, the initial structure used to determine the array of factorials loads, in general, may not provide a significant pattern of variable loads, so it is not definitive. This initial structure can be done by several methods of rotation of the factors, as Dillon and Goldstein [18], Johnson and Wichern [21]. It was used the VARIMAX method of orthogonal rotation of the factors for this study.

The VARIMAX method is a process where the reference axes of the factors are rotated around the source until some other position is reached. The objective is to redistribute the variance of the first factors to others and to achieve a simpler and more theoretically significant factorial [13, 15, 18, 19, 20, 21].

The choice of factors was carried out through the technique of latent root. So, the array of factorials loads, which measures the correlation between the common factors and observable variables, is determined by means of the correlation matrix, as Dillon and Goldstein [18].

For determining Social and Environmental Responsibility Performance Index - (IDRSA)it was used the matrix of factorials scores estimated by the orthogonal base factorial rotation process, as pointed out by Santana [20]. The factorial score puts each observation in the gap of the common factors. For each factor f_j, the i-th factor score extracted factorial score is defined by F_{Ij}, expressed as follows [18]:

$$F_{IJ} = \mathbf{b_1} x_{i1} + \mathbf{b_2} x_{i2} + b_p x_{ip}$$
$$F_{IJ} = \mathbf{b_1} x_{i1} + \mathbf{b_2} x_{i2} + b_p x_{ip} \quad (2)$$

Then:

b_i = are the estimated regression coefficients for the *n* Common factorials scores;

x_{Ij} = Are the *n* Observations of *p* Observable variables.

i = 1.2,...N.

j = 1,2,...,p.

To reach the equation that is the perception index [19, 20], show the sequence evolution of the formulas from the previous equation. It turns out that even if the variable F_{Ij} is not observable it can be estimated through the factorial analysis techniques, using the matrix of observations of the vector *x* of observable variables. In factorial notation, equation 2 becomes:

$$F_{(n,q)} = X_{(n,q)} b_{(p,q)} \quad F_{(n,q)} = X_{(n,q)} b_{(p,q)} \quad (3)$$

In Equation 3, *F* is the matrix of the estimated regression from the *n* Factorials scores and it can be affected by both the magnitude and the measurement units of the variables *x*. To work around this kind of problem, replace the variable *x* by the standard variable *w*, given the ratio of the deviation around the average and the standard deviation of *x*, as follows:

$$\frac{x_i - \bar{x})}{S_x}$$

With these values, Equation 3 is modified making equation 4 possible, then:

$$F_{(n,q)} = w_{(n,q)} \beta_{(p,q)}$$
$$F_{(n,q)} = w_{(n,q)} \beta_{(p,q)} \quad (4)$$

Based on equation 4, the beta weights matrix (β) with *q* standardized regression coefficients, replaces *b*, given that the variables are standardized on both sides of the equation. Pre-multiplying both sides of equation 4 by the value $\frac{1}{n}\frac{1}{n}\boldsymbol{w'}$, in which *n* Is the number of observations and *W* is the transposed matrix of *w'*, it makes it possible to reach the following equation:

$$\frac{1}{n} w'_{(p,n)} F_{(n,q)} = \frac{1}{n} w'_{(p,n)} w_{(n,p)} \beta_{(p,q)} = R_{(p,p)} \beta_{(p,q)} \quad (5)$$

The Matrix $\frac{1}{n}\frac{1}{n}\boldsymbol{w'w}$, therefore is the matrix of intercorrelated variables or correlation matrix among the observations of the matrix *x*, designated by R. The Matrix $\frac{1}{k} w' F \; \frac{1}{k} w' F$ It represents the correlation between the factorials scores and the factors themselves, denoted by Λ. With this, rewriting the equation 5, one must:

$$\Lambda_{(p,q)} = R_{(p,p)} \beta_{(p,q)}$$
$$\Lambda_{(p,q)} = R_{(p,p)} \beta_{(p,q)} \quad (6)$$

If the matrix R is non-singular, one can pre-multiply both sides of equation 6 by the inverse of R, obtaining:

$$\beta = \mathbf{R}^{-1} \Lambda \quad \beta = \mathbf{R}^{-1} \Lambda \quad (7)$$

Substituting the β vector into equation 4, we obtain the factorial score associated with each observation, as follows:

https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

$$F_{(n\backslash,q)}\backslash=w_{(n\backslash,p)}R^{-1}_{(p\backslash,p)}\Lambda_{(p\backslash,q)}$$
$$F_{(n\backslash,q)}\backslash=w_{(n\backslash,p)}R^{-1}_{(p\backslash,p)}\Lambda_{(p\backslash,q)} \quad (8)$$

The main formula of the perception index is reached where the IP is defined as a linear combination of these factorials scores and the proportion of the variance explained by each factor in relation to the common variance. The mathematical expression is represented by the following formula:

$$\mathrm{IP}_i = \sum_{j\backslash=1}^{q}\left(\frac{\lambda_j}{\sum_j \lambda_j}\mathrm{FP}_{ij}\right)$$
$$\mathrm{IP}_i = \sum_{j\backslash=1}^{q}\left(\frac{\lambda_j}{\sum_j \lambda_j}\mathrm{FP}_{ij}\right) \quad (9)$$

Then:

i = 1.2,...n.

λ = is the variance explained by each factor;

∑ λ = is the total sum of the variance explained by the set of common factors.

The factorial score was standardized (FP) to obtain positive values from the original scores and allow the hierarchies of the cities as the values of the performance index are located between zero and one. The formula that allows this tiering can be seen by the following equation:

$$FP_i = \left(\frac{F_i - F_{min}}{F_{max} - F_{min}}\right)$$

It can be seen that F_{min} F_{min} And F_{max} F_{max} are the maximum and minimum values observed for the factorial scores associated with the parameters observed. It is based on this understanding that it was possible to calculate the Social and Environmental Responsibility Performance Index - (IDRSA)adopted in this study.

2.2 Scale Levels

The classification used by the research to express the results achieved by the IDRSA is described in table 1.

Table 1: Analysis scale adopted by the research.

Scale	Description %	Description IDRSA
0.801 a 1.000	81 a 100	Great
0.601 a 0.800	61 a 80	Good
0.401 a 0.600	41 a 60	Regular
0.201 a 0.400	21 a 40	Bad
0.000 a 0.200	0 a 20	Terrible

Source: Own Elaboration.

2.3 Parameters and Variables

The questionnaire used is structured with three parameters and 29 variables. The first parameter aimed to identify the practices of entrepreneurs in the company, with social aspects, the second to identify practices related to environmental aspects and the third to identify practices related to economic aspects.

Table 2: Parameters and variables (model created by Cavalcante and Siqueira [17])

Parameter	Variables
Social Performance	Does the company have rules of conduct and disclosure for employees?
	Does the company work in a collaborative climate to promote changes?
	Is there any kind of conscious participation by the employee as a corporate citizen?
	Does the company include and adapt disabled people in its staff?
	Does the company offer health and safety working conditions?
	Does the company develop social actions (donations, support for social projects, unique social projects)?
	Does the company distribute its products or other products for social programs?
	Are there employees who are not interested / unaware of sustainable practices within the company?
	Are there few employees for many activities, new actions for social purposes and that end up overloading them?
Environmental Performance	Does the company use the selective waste collection system?
	Does the company have a battery collection and disposal policy?
	Does the company use non-toxic cleaning products?
	Does the company apply effective techniques to manage or use energy or use smart lighting?
	Does the company work in partnerships with entities focused on the environment?
	Does the company have accessories and devices to save water?

https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

	Does the company use waste disposal processes?
	In the company, when a waste disposal process is used, is there a revenue generated by this procedure?
	Does the company receive incentives / government agencies to carry out selective collection?
	In all the company's production process, are there opportunities to reduce the environmental impact?
	Does a company have environmental certificates (for example: ISO 14000)?
Economic Performance	Are there priority in the company for suppliers that carry out sustainable practices?
	In the company, are there required standards defined in contracts with suppliers?
	Does the company require any type of certification from its suppliers?
	Does a company qualify its professionals to offer customers, clearly, the nature and content of the products and services offered?
	Does the company have defined forms of after-sales relationship?
	Are there procedures in the company for assessing the quality of services provided?
	Does the company publicize its social or environmental programs to differentiate its brands and increase sales?
	Does the company fulfill its commitments to the government in an ethical and responsible manner (regular payment of taxes, ban on the supply of bribes of any kind)?
	Does the company have extra resources available for use in sustainable projects or donations?

Source: Own Elaboration.

2.4 Characterization of the research site

The Guajará-Mirim Free Trade Area (ALCGM) is limited to a continuous area of 82.50 km², located in the city of Guajará-Mirim, state of Rondônia, on the Brazil / Bolivia border. It represents 0.33% of the municipality of Guajará-Mirim. In the city of Guajará-Mirim, 335 commercial companies, 11 service companies and 6 industrial companies were identified, which make use of the Free Trade Area incentives. The total number of companies operating in the municipality at the time of the survey was 691 units.

For the research, 54 companies were selected that use government tax incentives. Only 32 companies accept to participate in surveys, 19 from the retail sector, 10 in the wholesale sector, 2 from the wholesale-retail sector and a retail sector.

2.5 Characterization of economic activities using the National Classification of Economic Activities (CNAE) Parameter

The wholesale trade comprises activities of resale of goods of agricultural, extractive or industrial origin, at any level of processing (raw, processed, semi-prepared and ready for use) and in any quantity, predominantly for retailers, for other wholesalers, for producing agents in general, institutional and professional products. Wholesale trade customers are predominantly legal entities, agricultural, industrial, commercial and service products, public and private institutions and self-employed professionals. The wholesale trade comprises the usual manipulations of this activity, such as: assembly, classification and grouping of products on a large scale, conditioning and environment, redistribution to the recipients of the smallest scale, when performed by the commercial unit itself. Retail trade comprises activities for resale of new and used consumer goods to the general public, mainly for the final consumer, for personal or family consumption. Commercial units that resell both to companies and to the general public should be classified in retail, as is the case with hardware stores and building materials. The wholesale and retail trade comprises activities derived from the main wholesale and retail activities.

2.6 Ethical Aspects

The questionnaire was applied to manager, managing partner, administrative manager, financial manager, commercial manager, human resources manager, warehouse manager, owner, administrator, sales consultant, sales, administrative assistants, office clerk, secretary, workers in general, after signing the Free and Informed Consent Term - TCLE.

III. RESULTS AND DISCUSSION

To better understand the socio-environmental responsibility for sustainability in the Guajará-Mirim Free Trade Area, in the context of local development policies,

https://dx.doi.org/10.22161/ijaers.74.40 ISSN: 2349-6495(P) | 2456-1908(O)

support was sought in the epistemological theory of endogenous development.

To understand the consequences of planning for the development of a region is to understand the concept of development, which can affect economic growth. Growth can be synonymous with increased production, income and employment in a specific region, without economic and social development taking place. However, development presupposes a reduction in social and economic inequalities [23]. According to Oliveira [24]in Latin America and Brazil, for decades, as development policies emphasized for the need to promote product and income growth through capital accumulation and industrialization applied in the import substitution strategy. This strategy aimed to produce internally what was previously imported. To this end, domestic producers were protected from foreign competition through import duties and prices, in addition to a series of benefits granted by governments, which believed that industrialization was the key to development.

Penna [23] reported that, based on the economic development policy, Brazil was marked by the expansion of the process of industrialization and migration from the countryside to the city. Such policy, carried out through external financing, implements programs to modernize infrastructure, transport and energy, leaving companies like Petrobrás and Eletrobrás as inheritance. During this period, a country's development was thought of as a result of good state planning and the state's ability to implement its programs and projects. Therefore, development was thought through national guidelines and carried out by the central government. However, in the mid-1980s, the country suffered a break with this model of national development, as did the American and European countries. The external financing model caused by the debt crisis was alleged or exhausted, in the Brazilian case, associated with the deficits in the trade and payment balance of 1982[23].

Costa, Cunha[25] pointed out that with a crisis in the financing model and in the internationalization process of the economy, a new vision for the concept of development emerged, previously focused only on the economic one, also paying attention to the advances in quality of life, in equity, democratization, citizen participation and environmental protection. According to Martins[26], the current tendency to think and plan development is to endow it with a more human character and to consider man simultaneously as a subject and beneficiary. The author proposes the participation of people in the entire development process (action planning) and, even with results in effective improvements in material living conditions, they are not sufficient to guarantee the continuity of the process. The real local development differential does not meet its objectives (well-being, quality of life, endogeny, synergies, etc.), but in the posture that it attributes and guarantees to the community or the role of the agent and not just the beneficiary of development. This involves reviewing a participation issue.

Local participation means "giving people greater opportunities for effective participation" in development activities. This means providing conditions for them to mobilize their own potential, be social agents instead of liabilities, manage their resources, make decisions and control how activities affect their lives. The participatory approach involves people in the process of their own development. Considering local or community participation as a process means generating social and economic benefits, but it is not limited to just that, the participatory process that helps people to buy more effective control over their economies [27].

According to Barquero [28], the ability of a society to lead and drive its own regional development, conditioning it to the mobilization of productive factors available in its area and to its endogenous potential, reflects the form of development called endogenous. For this same author, two dimensions can be identified in regional development. The first dimension, the economic one, in which the local business society uses its capacity to organize the productive factors of the region. The second dimension, sociocultural, where local values and institutions serve as a basis for regional development.

The theory of endogenous development focuses on a regional issue, presents contributions to a problem of regional inequalities and policy instruments for its correction [28]. The model can be defined as bottom-up development or be part of the original socio-economic potential of the place, and not a top-down development model, that is, part of the planning and intervention carried out by the Brazilian State [29].

According to Mazzali, Souza [30], the actions of localities that adopt the dynamism of their economies must take into account the characteristics of the productive structure and the most favorable conditions, in order to promote the necessary internal articulations, accompanying and adapting to those in the socioeconomic environment in which it operates. The ability to interact with changes in the external environment and to positively (appropriably) revert to the municipality / region and the effects of these changes can have decisive weight for economic and social development. That is, obtain results that bring improvements in terms of job and income generation,

https://dx.doi.org/10.22161/ijaers.74.40 ISSN: 2349-6495(P) | 2456-1908(O)

infrastructure, complementary products and services, which will translate into better local quality of life.

The concept of endogenous development, from a regional point of view, can be characterized as a process of economic growth that implies an expansion of the capacity to add value to production, as well as the absorption capacity of the region, which is to retain or reduce surplus produced in the region. local economy and therefore also attracts surpluses from other regions [31]. The central theory of endogenous development is that a country, region or location with better human capital, science and technology, institutions, research and development can more easily increase the use of the production system, accelerate growth, increase product and allow better income distribution. Thus, it is an appreciation and incorporation of these new factors to the traditional theory that reside in the contribution of the endogenous growth theory to the theoretical and practical fields of regional / local development policies[32].

Souza Filho[33], highlights that the main contribution of endogenous theory was to identify the decisive factors of production, such as social capital, human capital, knowledge, research and development, information and institutions, included in the region and not exogenously, as was understood until now. For this reason, it is concluded that the region endowed with these factors or strategically directed to the development of internal criteria, has better conditions to achieve an accelerated and balanced development.

3.1. Social and Environmental Responsibility Performance Index - IDRSA in the Free Trade Area of Guajará-Mirim, Rondônia, Brazil / Bolivia border

As already described in the research methodology, the socio-environmental responsibility performance index (IDRSA) was built from the application of a questionnaire prepared by Cavalcante and Siqueira [17].

3.1.1 Social Performance Index – IDS.

The average IDS presented a result considered a regular performance index (IDS 0.550), according to the scale adopted in the research. The highest index occurred in the wholesale-retail sector (IDS 0.613 good index), followed by the retail-wholesale sector (IDS 0.598 regular index) and the retail (IDS 0.540 regular index) and wholesale sectors (IDS 0.449 regular index). (table 3).

100% of companies in the wholesale and retail sectors have standards of conduct and disclose their social actions to their employees. The wholesale sector has a frequency of 80% and retail represents only a frequency of 27%. The retail and wholesale sectors and wholesale-retail account for 100% frequency of companies that work in a collaborative climate to promote changes according to social policies, followed by the retail sector with 73% and the wholesale sector with 50%. The retail-wholesale sector represents 100% frequency of conscious employee involvement as a citizen in the company's social actions, while the retail sector represents 68.42%, the wholesale-retail sector 50% and the retail sector represents only 40 %.

Table 3: Social Performance Index - IDS.

Economic Sector	IDS	Description
Wholesale retail	0.613	Good
Retail-Wholesale	0.598	Regular
Retail	0.540	Regular
Wholesale	0.449	Regular

Source: Research results.

Only companies in the wholesale-retail sector showed 100% attendance with regard to the inclusion and adaptation of employees with physical disabilities. In the wholesale, retail and retail-wholesale sectors, there is no concern for the social inclusion of people with disabilities. Working conditions with health and safety are frequent 100% in the wholesale and retail and wholesale sectors. Only part of the economic sectors develop social actions (donations, support for social projects, exclusive social projects).Companies in all sectors do not have a policy of practices for distributing their products or surpluses for social programs. In other words, companies do not distribute their surplus to social programs or projects. There is no information on sustainable practices within companies. In general, all companies in the sectors have employees qualified for normal activities, and do not overburden, if the company is involved in new social actions.

3.1.2 Environmental Performance Index - EPI

The sectors of the wholesale-retail economy (EPI 0.583 regular index) and retailer-wholesaler (EPI 0.429 regular index) were the ones that presented the best performances. The retail sector (EPI 0.352 bad index) and the wholesale sector (EPI 0.259 bad index) were the economic sectors that had the worst performances. The average of the average EPI was 0.405 considered a regular performance index. (table 4).

Only a few sectors are concerned with a selective collection system, but, in general, companies are not concerned with this practice. 100% of the companies do not have a policy of collecting and disposing of batteries and other similar waste. Only the wholesale-retail sector and the wholesale-retail sector do not use toxic products.

https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

Table 4: Environmental Performance Index - EPI.

Economic Sector	EPI	Description
Wholesale retail	0.583	Regular
Retail-Wholesale	0.429	Regular
Retail	0.352	Bad
Wholesale	0.259	Bad

Source: Research results.

In general, companies are not concerned with applying efficient techniques to manage or use electricity or smart lighting. Likewise, the research shows that companies are not concerned with partnerships with entities focused on the environment. Only the retail-wholesale and wholesale-retail sectors have the installation of accessories and devices to save water. In general, there are no policies or practices to save or waste water. It was observed that in all sectors there is no revenue generated in the waste disposal process.

There is no incentive from government agencies for environmental responsibility policies, as the municipality itself does not have selective waste collection.However, it is worth mentioning that ALCGM itself is aligned with a peculiar situation in the region, so that the development policy is characteristic of Guajará-Mirim, due to its environmental weight, a fact that does not observe other municipalities in Rondônia with this same institutional benefit.It is demonstrated that the needs of environmental policies and environmental sustainability management go unnoticed, both by the business sector and the public sectors, which end up not requiring actions aimed at stimulating the practice of socio-environmental responsibility at the local level.

Only the retail-wholesale sector has opportunities to reduce the environmental impact during the production process.The variable that draws the most attention is the fact that none of the sectors has environmental certification. This shows a lack of concern on the part of companies with regard to the environment.

3.1.3 Economic Performance Index - IDE

The wholesale-retail sector (IDE 0.485 regular performance index) and the wholesale sector (IDE 0.413 regular performance index) showed the best performances. The retail-wholesale sector (IDE 0.384 poor performance index) and the retail sector (IDE 0.369 poor performance index) had the lowest indexes. With an average IDE (0.412), the performance index for this sector is regular. (table 5).

Table 5: Economic Performance Index - IDE.

Economic Sector	IDE	Description
Wholesale retail	0.485	Regular
Wholesale	0.413	Regular
Retail-Wholesale	0.384	Bad
Retail	0.369	Bad

Source: Research results.

The only sector that prioritizes suppliers that use sustainable practices is the retail-wholesale sector. The wholesale and retail sectors are extremely negative. Only in the wholesale-retail sector (frequency of 100%) are there usage patterns applicable in contracts with suppliers. The other sectors remain with negative results, which means that there is no concern on the part of companies to define standardization of their contracts with their suppliers.The companies do not request any type of certification from their suppliers. There is no interest from companies in these sectors in knowing how the manufacturing process for products supplied by their suppliers works.

The companies that qualify professionals to serve customers, explaining the nature and content of the products and activities offered, with a 100% participation, are the wholesale-retail and retail-wholesale sectors. The wholesale and retail sectors have this frequency at 50% and 52%, respectively. 100% of the companies in the retail sector maintain forms of after-sales relationship. All sectors obtain a positive result, which indicates that there is interest on the part of all sectors in a good company x customer relationship. In other words, the company is concerned with customer satisfaction, as this means that the customer can buy again at the company.

The procedures for assessing the quality of services provided are present 100% in the retail-wholesale sector, 52% in the retail sector and 50% in the wholesale sector. The wholesale-retail sector was the only sector with a negative result. Only the retail-wholesale sector (100% frequency) discloses its social or environmental programs, using different brands and increasing its sales. All sectors fulfill their commitments to the government in an ethical and responsible manner (regular payment of taxes, ban on the supply of bribes of any kind).

The retail-wholesale sector (100% frequency) represents the only sector with extra resources available for application in sustainable projects or donations. These results demonstrate that companies are not interested in sustainable projects. It is the opposite of what should happen, as companies are located in Guajará-Mirim, where

https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

there is a high percentage of protected areas and also due to tax incentives in the area of free trade.

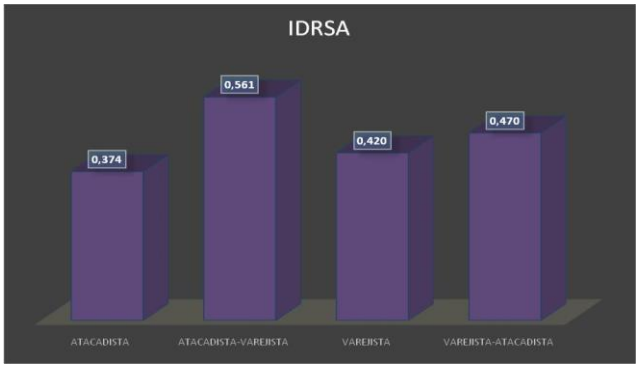
3.2.4 Social and Environmental Performance Index - IDRSA

The average of the results found for each of the analyzed parameters (social, environmental and economic) reaches the performance index of socio-environmental responsibility of the companies for each of the economic sectors surveyed in the free trade area of Guajará-Mirim. The wholesale-retail sector had the best performance among all sectors with an index (IDRSA 0.561), considered "regular" performance. The sector of retail and wholesale (IDRSA 0.470) and the retail sector (IDRSA 0.420) also display rankings with regular performance indexes. The wholesale sector (IDRSA 0.374) was classified as "bad". (table 6 and graph 1).

Table 6: Social and Environmental Responsibility Performance Index - IDRSA.

Economic Sector	IDRSA	Description
Wholesale retail	0.561	Regular
Retail-Wholesale	0.470	Regular
Retail	0.420	Regular
Wholesale	0.374	Bad

Source: Research results.



Graph 1: Social and Environmental Responsibility Performance Index - IDRSA.

Source: Research results.

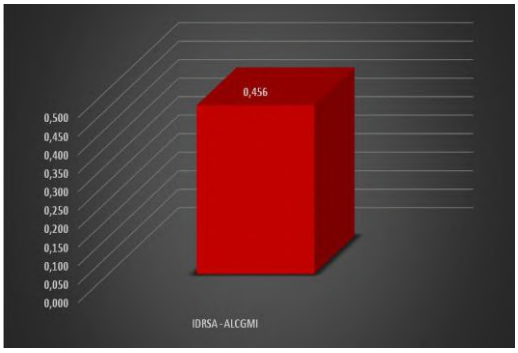
The overall average across all surveyed sectors resulted in IDRSA (0.456). Guajará-Mirim free trade companies have regular IDRSA. (table 6 and graph 5).

The Guajará-Mirim Free Trade Area (ALCGM) aims to define an import and export free trade area, under a special tax regime with the promotion or development of the Guajará-Mirim border region, in order to increase relations bilateral agreements with neighboring countries, in accordance with the Latin American Integration Policy. This institutional provision was regulated by Decree nº 843, of June 23, 1993, under the direct administration of the Manaus Free Trade Zone Superintendence – SUFRAMA[17].

Table 7: Social and Environmental Responsibility Performance Index - IDRSA.

Área de Livre Comércio de Guajará-Mirim	**IDRSA**
Atacadista; Atacadista-Varejista; Varejista; Varejista-Atacadista	0.456

Source: Research results.



Graph 2: ALCGM's Social and Environmental Responsibility Performance Index.

Source: Research results.

The venture was born as an economic alternative for the city of Guajará-Mirim and region. The project aimed to rescue, in view of the transformations that occurred since the 1970s and 1980s, the commercial potential, eroded by the national economic situation and the loss of advantages of national products compared to products imported by the neighboring country, in Bolivia [34]. However, the opening of Brazilian trade to foreign products, at the same time, brings a severe blow to the region that already lives a long period of economic crisis [16, 35].

The Free Trade Area presents its main possibilities for promoting development, considering that the incentive to trade expands markets, since the reduction of taxes and the reduction of prices, favors the possibility of greater sales. Consequently, it will be necessary to hire more people, reduce unemployment, increase income, corporate revenue, consumer well-being, as you will be able to buy more products at lower prices and, the growth of tax revenue, when analyzed with others taxes without tax incentives [36].According to Albuquerque [36], free trade areas were created as part of policies aimed at the development of the Amazon region. Os benefícios, concedidos por meio de incentivos tributários visam à melhoria da qualidade de vida de determinadas regiões. This is due to the increase in trade and the number of companies; the price reduction, which is also high due to the regions' logistical difficulties;

https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

for the creation of new jobs and, consequently, for the formation of a virtuous economic circle.

The intentions of creating the Guajará-Mirim Free Trade Area were really good and focused on regional economic development, however, in the face of situations related to public and private management and with deficient policies to stimulate regional development, ALCGM succumbed. A large number of commercial houses, created under the motivation of the Free Trade Area, had to close like doors. Once again, the disastrous political action regarding the economic development of the city of Guajará-Mirim is evident [37]. What can be observed in the commercial sectors of Guajará-Mirim are the forms of tax treatment from the perspective of businessmen. According to Santos [38], a tax competence consists of an authorization to exercise tax power, where a practice of preventing acts practiced is the action of each federative entity: Union, Federal District, States and Municipalities. A set of tax incentive tax laws were created to promote local and regional development in free trade areas, such as the Guajará-Mirim case. The operations destined for the Free Trade Area of Guajará-Mirim, are exempt from ICMS and IPI and taxed at zero rate (0) of PIS and COFINS [39].

According to Silva [40], the Free Trade Areas defend Public Policies aimed at the development of frontier areas in the Brazilian Amazon, through tax incentives that encourage companies to produce and commercialize products in the Amazon, a precarious access region, creating new ones jobs and, consequently, bringing development. The studied region not only suffers from economic problems and physical isolation, but also verifies the lack of studies and scientific work from the economic, social and environmental perspectives. Among the few published studies on the subject in this border area of Guajará-Mirim, the research by Cavalcante and Alves [41] "Corporate Social Capital Index (ICSE) in the Free Trade Area of Guajará-Mirim, Rondônia: Uma analysis of the Theory of Endogenous Development and the study "Socioenvironmental Responsibility of Companies in the Free Trade Area of Guajará-Mirim, Rondônia (ALCGM) authored by Cavalcante and Siqueira [17].

IV. FINAL CONSIDERATIONS

Although ALCGM arose from a policy framed in the context of the theory of endogenous development and motivated by local forces or by interests of strategic economic sectors, a reason for the establishment of this policy in the border region and in the green area of Rondônia demonstrates that the environmental aspect it was, in fact, the main condition for its effective implantation in the Free Trade Area. Thus, a priori, this conditioner, at least, must be charged by the competent bodies to modify aspects of sustainable development. The survey results demonstrate the absence of environmental sustainability policies and practices, both by public agents and by ALCGM companies.

The "Wholesale" economic sector, which today represents the main strength of ALCGM, but has the lowest index of social and environmental responsibility (IDRSA = 0.374), stands out negatively.

The results of the survey reveal a fragility of companies that benefit from tax incentives in the Guajará-Mirim Free Trade Area in socio-environmental policies and practices.

It is hoped, with this work, to contribute to the issue of socio-environmental responsibility becoming part of the game of economic and political negotiations. That the discussion, implementation and management of socio-environmental activities be strengthened in ALCGM, and that companies fall within the focal objectives that justified the creation of ALCGM.

REFERENCES

[1] Busch SE. Responsabilidade socioambiental de empresas fornecedoras de madeira certificada do tipo plantação. Tese (doutorado). Universidade de São Paulo Faculdade de Saúde Pública. Programa de Pós-Graduação em Saúde Pública. São Paulo, 2008.

[2] Robinson S. Key survival issues: practical steps toward corporate environmental sustainability. Corporate Environmental Strategy, New York, v. 7, n. 1, p. 92-105, 2000.

[3] Sousa ACC. Responsabilidade Social e Desenvolvimento Sustentável: A incorporação dos Conceitos à Estratégia Empresarial. Dissertação (Mestrado) – Universidade Federal do Rio de Janeiro – Programas de Pós-Graduação de Engenharia, COPPE/UFRJ, Rio de Janeiro, RJ, 2006, p. 230.

[4] Senhora EM, Takeuchi KP. Lógicas Da Responsabilidade Social Como Estratégia Do Desenvolvimento Sustentável. Simpósio de Excelência em Gestão e Tecnologia - SEGET, 2005.P 848-862.

[5] Barbieri JC. Gestão Ambiental Empresarial: Conceitos, Modelos e Instrumentos. 1 ed. São Paulo: Editora Saraiva, 2004.

[6] Brasil. Ministério do Meio Ambiente. Agenda Ambiental na Administração Pública (A3P).Brasília: Ministério do Meio Ambiente, 2009. Disponível em:<http://www.mma.gov.br/estruturas/a3p/_arquivos/cartilha_a3p_36.pdf>. Acesso em: 17 abr. 2019.

[7] Jamali D. Insights into the triple bottom line integration from a learning organization perspective. Business Process Management Journal, New York, v. 12, n. 6, p. 809-821, 2006.

[8] Ethos. Instituto Ethos. Glossário indicadores ETHOS. Disponível em: http://www3.ethos.org.br/wp-content/uploads/2013/09/Glossário-Indicadores-Ethos-V2013-09-022. Acesso em: 18/05/2019.

[9] Srour RH. Ética Empresarial:posturas responsáveis nos negócios, na política e nas relações pessoais. Rio de Janeiro: Campus, 2000.

[10] Young R. Dilemmas and advances in corporate social responsibility in Brazil: the workof the

[11] Dias R. Responsabilidade social: fundamentos e gestão. 1. ed. São Paulo: Atlas, 2012.

[12] Perroux F. A Economia do século XX. Porto: Herder, 1967.

[13] Hair JF *et al*. Análise multivariada de dados. 5. ed. Porto Alegre: Bookman, 2005. 730 p.

[14] Santana AC. Métodos quantitativos em economia: elementos e aplicações. Belém: UFRA, 2005.

[15] Santana AC. Elementos de economia, agronegócio e desenvolvimento local. Belém: GTZ; TUD; UFRA, 2005. p.133-142. (Série Acadêmica, 01).

[16] Cavalcante FRC. Análise da desigualdade regional no Estado de Rondônia à luz da teoria institucionalista de Douglass North.Tese (Doutorado) - Universidade Federal do Pará, Núcleo de Altos Estudos Amazônicos, Programa de Pós-Graduação em Desenvolvimento Sustentável do Tropico Úmido. Belém, PA, 2011, 464 p. Disponível em:<http://repositorio.ufpa.br/jspui/bitstream/2011/2984/1/Tese_AnaliseDesigualdadeRegional.pdf>. Acesso em: 14/04/2019.

[17] Cavalcante FRC, Siqueira SMM.Responsabilidade Socioambiental das Empresas Localizadas na Área de Livre Comércio de Guajará-Mirim, Rondônia. Jornada Científica CEDSA. Centro de Estudos Interdisciplinar de Desenvolvimento Sustentável da Amazônia – CEDSA. Porto Velho, 22 a 24/novembro. 2017.

[18] Dillon WR, Goldstein M. (1984). Multivariate analisys: methods and applications. New York: Wiley.

[19] Gama ZJC, Santana AC de, Mendes FAT, Khan AS (2007). Índice de desempenho competitivo das empresas de móveis da região metropolitana de Belém. Revista de economia e agronegócio, v. 5, p. 127-159.

[20] Santana AC. (2007). Análise do desempenho competitivo das agroindústrias de polpas de frutas do Estado do Pará. Revista de economia e sociologia rural, v. 45, n. 3, Brasília, jul/sept.

[21] Johnson RA, Wichern DW. (1988). Applied multivariate statistical analysis. 2 ed. New Jersey: Prentice Hall International.

[22] Reis E. (2001). Estatística multivariada aplicada. 2. ed. Lisboa: Silabo.

[23] Penna RMACO. Uma avaliação do planejamento para o desenvolvimento do Estado de Mato Grosso. Dissertação (Mestrado) – Universidade Federal de Mato Grosso. Faculdade de Economia. Mestrado em Agronegócios e Desenvolvimento Regional. Cuibá, MT, 2011. 224p. Disponível em: http://www.ufmt.br/ufmt/site/userfiles/file/adr/Disserta%C3%A7%C3%B5es/Disserta%C3%A7%C3%A3o_RobertaPenna.pdf. Acesso em: 14/04/2019.

[24] Oliveira GB de. Uma discussão sobre o conceito de desenvolvimento. **Rev.FAE**, Curitiba, v.5, n.2, p.37-48, maio/ago. 2002.

[25] Costa FL, Cunha APG. Pensar o desenvolvimento a partir do local:novo desafio para os gestores públicos. VII Congreso Internacional delCLAD sobre la Reforma del Estado y de la Administración Pública, Lisboa, Portugal, 2002.

[26] Martins SRO. Desenvolvimento Local: questões conceituais e metodológicas. INTERAÇÕES. Revista Internacional de Desenvolvimento Local. Vol. 3, N. 5, p. 51-59, Set. 2002.

[27] Tabosa FJS, Teixeira KH, Silva DMF, Madalozzo CL, Mayorga MIO. (2004). "Desenvolvimento Local e Capital Social: uma Leitura sobre os núcleos e arranjos produtivos do Estado do Ceará". In: XLII Congresso Brasileiro de Economia e Sociologia Rural, 2004. Anais. Brasília: SOBER. v. 1, p. 1-14.

[28] Barquero A. Desarrolo local: uma estratégia de creación de empleo. Madrid: Pirâmide, 1988.

[29] Amaral Filho J. Desenvolvimento regional endógeno em um ambiente federalista.Artigo - Revista Planejamento e Políticas Públicas, Nº 14, 1996.Disponível em: http://ipea.gov.br/ppp/index.php/PPP/article/view/129. Acesso em: 14/04/2019.

[30] Mazzali L, Souza MC de A. As Pequenas empresas e o dinamismo da economia local – O caso de Campo Limpo Paulista em São Paulo, Brasil. Revista da Micro e Pequena Empresa, Campo Limpo Paulista, v.7, n.2, p.3-17, 2013 (Mai/Ago).

[31] Amaral Filho J. A endogeneização no desenvolvimento econômico regional e local. Planejamento e políticas públicas, n. 23, jun. 2001.

[32] Almeida TA, Santana Júnior G. A influência da economia regional nas políticas de desenvolvimento implementadas na Bahia no período 1959-2006. VIII Encontro de Economia Baiana – Set. 2012 Economia Regional.

[33] Souza Filho JR. Desenvolvimento regional endógeno, capital social e cooperação. Porto Alegre: UFRS, 2002.

[34] Harrison AT. As Rugas da Cidade: Um estudo sobre fenômeno de envelhecimento espacial em Guajará-Mirim/RO – Século XX. Dissertação (Mestrado) – Universidade Federal de Rondônia – UNIR, Núcleo de Ciências e Tecnologia – NCT, Departamento de Geografia – DG, Programa de Pós-Graduação em Geografia – PPGG, Porto Velho, RO, 2009, p. 158. Disponível em: http://www.mestradogeografia.unir.br/downloads/3358_alexandre_thomaz_2007.pdf. Acesso em: 17/04/2019.

[35]Cavalcante FRC, Silva FC. Desenvolvimento e conservação no Estado de Rondônia: uma análise a partir do institucionalismo de Douglass North. Papers do NAEA(UFPA), v. 285, p. 3-29, 2011.

[36]Albuquerque CRC de. Áreas de livre comércio: O caso de Boa Vista. Dissertação (Mestrado) – Faculdade de Ciências Econômicas da Universidade Federal do Rio Grande do Sul – UFGRS, Programa de Pós-Graduação em Economia. Porto Alegre, RS, 2011, p. 103.

https://dx.doi.org/10.22161/ijaers.74.40 *ISSN: 2349-6495(P) | 2456-1908(O)*

[37] Harrison AT. As Rugas da Cidade: Um estudo sobre fenômeno de envelhecimento espacial em Guajará-Mirim/RO – Século XX. Dissertação (Mestrado) – Universidade Federal de Rondônia – UNIR, Núcleo de Ciências e Tecnologia – NCT, Departamento de Geografia – DG, Programa de Pós-Graduação em Geografia – PPGG, Porto Velho, RO, 2009, p. 158. Disponível em: http://www.mestradogeografia.unir.br/downloads/3358_alexandre_thomaz_2007.pdf. Acesso em: 17/04/2019.

[38] Santos GLM dos. Tratado internacional e tributos estaduais e municipais. 2007. Disponível em <http://www.dominiopublico.gov.br/download/teste/arqs/cp061748.pdf> Acesso em: 16 ago. 2019.

[39] SUFRAMA. Modelo ZFM: Áreas de benefícios. Disponível em: http://www.suframa.gov.br/zfm_area_de_beneficios.cfm> Acesso em: 03 ago. 2019.

[40] Silva JL da. Aspectos Econômicos e Sociais da Área de Livre Comércio Macapá e Santana: vinte e sete anos após sua implantação. Dissertação (Mestrado) em Ciências Ambientais. Programa de Pós-Graduação em Ciências Ambientais. Universidade Brasil, São Paulo, 2018.

[41] Cavalcante FRC, Alves EA. O Índice de Capital Social Empresarial (ICSE) na Área de Livre Comércio de Guajará-Mirim, Rondônia: Uma Análise a Partir da Teoria do Desenvolvimento Endógeno. Revista de Administração e Negócios da Amazônia, v.4, n.2, mai./ago. 2012.