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BUSINESS PERFORMANCE IN CONCENTRATED SECTORS: A COMPARATIVE STUDY IN THE STATE OF RIO GRANDE DO NORTE
CORPORATE PERFORMANCE IN CONCENTRATED SECTORS: COMPARATIVE STUDY IN THE SALT SECTOR IN THE STATE OF RIO GRANDE DO NORTE

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ABSTRACT

In the current competitive environment, administrative and financial follow-ups are essential for establishing the necessary requirements for efficient decision making. Thus, the objective of this study was to compare the business performance of the salaried sector of Rio Grande do Norte in the period of 2010/2011, with mining and hospital services sectors that also present a high degree of concentration, according to classification based on the Concentration Ratio (CR) and Herfindahl-Hirschman (HH).The research was of quantitative nature applied in 33 saline companies of Rio Grande do Norte. For the treatment of the data, the multivariate cluster analysis technique was performed. Regarding the results, it was possible to identify that the saline sector was not net of 11,11%. It can be concluded that, due to the inelasticity of the saline sector, it has shown growth in the State.

Key words: Business performance, concentrated sectors, corporate sustainability, Concentration ratio (CR), Herfindahl-Hirschman index (HH).

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1 INTRODUCTION

The business world has now undergone numerous transformations, which have made companies think strategically about innovative businesses. As a result, factors such as competition, product acceptance, marketing and the organization's policies need to be tightly linked so that the organization stays in a demanding and competitive market. In this sense, entrepreneurs began to review their concepts and came to realize that they had to adapt to the globalized market, since, in this way, they would be more likely to guarantee the permanence of their products and the continuity of the activities for the long term (KIBEREN; MUSIEG, JUMA, 2013).

According to Capobiango *et al.* (2012) it is necessary to carry out the administrative / financial follow-up of the companies, with the purpose of having decision-making information, keeping in mind that maintaining a changing and competitive market in relation to goods and services is not a task considered easy. For Oliveira (2011), the analysis of concentration in an organization evaluates the effects of competition not only in relation to the number of companies involved, but also its impact on the level of production and prices.

It is known that, every day, it is necessary to make decisions in the companies, for which, consequently, the manager lacks support, that is, information that makes his work viable. A relevant instrument is composed of economic / financial performance indices, which contribute to provide a better insight into economic variables. Analyzing your bottom line makes the manager better assess your business, have confidence in your investments, manage your working capital, consider the need to use third-party capital and look for cost-saving solutions, developing innovative ideas for your products (LUNENBURG , 2011).

The control of corporate performance is responsible for the results generated under the financial and non-financial aspects, considering that the organization that does not control its performance, as a rule, is not able to evaluate at what level it is, since it is through this type of information that it becomes possible to give an opinion of the business health and compare the results with other companies of the same branch, thus observing vulnerabilities and making managers think of workable solutions to solve everyday problems (KEHINDE, 2012).

According to Kaplan and Norton (1997), measuring the performance of companies is fundamental to strategic management, since what can not be measured can not be managed either.

In view of this scenario, the objective of this study is to compare the business performance of the state of Rio Grande do Norte (RN) in the period of 2010/2011, with mining and hospital services sectors that also present a high degree of concentration, according to classification based on the Concentration Ratio (CR) and Herfindahl-Hirschman (HH) indices. The period defined for the research was based on documentary data available in the *Revista Exame Melhores e Maiores* (2011-2012), for the years 2010 and 2011, in which the North and Northeast regions are highlighted.

The study makes a contribution to show the relevance of concentrated sectors such as saline. Characterizing the concentrated sectors is necessary to better understand their specific qualities, be it in relation to services or products, as well as how they are represented economically and how they measure their financial and sustainable performance, which is also fundamental for increasing knowledge in the area.

The article is organized in five parts. In addition to this introduction, the theoretical framework presents the concentrated sectors and the measurement of business performance.

In the methodology, are the data collection and treatment. The results analysis is based on the analysis of clusters of social and financial indicators, the intersectoral comparison of the financial indicators and the degree of concentration. Finally, final considerations and references are presented.

2 THEORETICAL REFERENCE

2.1 Concentrated sectors

One of the appropriate criteria for the management of companies is that of the sectoral organization, according to which a company or group with all its parts is well coordinated, moving in such a way that they are adjusted and also linked to the sector of which they are part, so that they form an operating unit and not a conglomerate of separate parts. In the same way that there is management in a company, there must also be in one sector, so that most of the solutions found benefit all companies that produce services or goods (GRAHAM, 1997).

Goschin *et al.* (2009) describe the actions of the economic activities of the sectors concentrated in a given region, generally in comparison to the rest of the field, whereas the geographical, climatic and labor concentration of an activity favors the development of a group of companies with the same activities. This is what justifies the concentration of sectors in specific regions.

In the opinion of Carreira and Lopes (2012), the concentrated activity stands out with certain types of goods or services and ends up bringing a contribution to the local and providing a national economic growth. Factors such as wages, knowledge, productivity, economic growth and location are essential to define the concentration of a sector.

According to Tedesco (2012), some measures can identify the issues that lead a sector to be concentrated in a given region, and also aims to know how managers can exploit the behavior of a market, this happens through measures that use criteria of weighting. Normally, the concentration level of a sector that works with specific activity is associated with the increase of production capacity. In the conception of Kupfer and Hasenclever (2012), the higher the degree of concentration, the less competition occurs and the greater the power of these companies in the business environment.

Some sectors of economic activity have the peculiar characteristic of presenting high concentration, as is the case of the saline, mining and hospital services sectors.

As Bezerra *et al*. (2012) claims, salmon production in Rio Grande do Norte has a higher concentration in the municipalities of Macau and Mossoró, which contribute about 75% of the total production of the country. In this state, the largest company has a 40% share of total production, the two largest contributors with 57, 5% and the six largest share is 89,5% of the total. The destination of the noth-rio-grandense exports is directed mainly to Nigeria and the United States, which together absorb 90% of the sea salt in bulk. The refining capacity is more distributed, with 56% of it in the RN and 44% in the South / Southeast, mainly in Cabo Frio, in the State of Rio de Janeiro.

Considering the data cited, the saline sector is economically representative for both Rio Grande do Norte and the country. According to Aguiar (2012), the state has already managed to export one million tons, which is significant worldwide. In 2012, the volume did not exceed 200 thousand tons. The *Programa de Aceleração do Crescimento* (PAC) increased the salt storage area by 8.000 square meters and increased the storage capacity of Porto-Ilha in Rio Grande do Norte

from 120 thousand tons to 220. All this in order to make the terminal more competitive and to make saline vessels up to 75 thousand tons dock in port. Inaugurated in June 2012, the new structure was never used, due to a 20% loss in state salt production, which forced the sector to cancel exports. Inaugurated in June 2012, the new structure was never used, due to a 20% loss in state salt production, which forced the sector to cancel exports. For those who, in previous years, exported more than 700 thousand tons of salt, foreign trade was reduced by more than 50%. According to these data, exports of Rio Grande do Norte salt show a downward trend in these years. In 2007, 701 thousand tons of bulk marine salt was sold, which represented US$ 9,3 million. In 2008, the export of the product fell almost 50%, from 297 thousand tons to a turnover of US $ 4,7 million. In 2010, it rose again to 741 thousand tons and US$ 14 million, but in 2011, it dropped 38%, with 398 Mt and $ 8,6 million. Given the lack of export stock, the domestic market has become a priority. With the shortage of the product in the market due to the heavy rains, there was a valorization in the price of the salt, which, to a certain extent, compensated the losses that the producers had with the foreign trade.

In view of this context, it is possible to identify the existence of other studies that have as object of study the saline sector in the RN, such as the dissertation of Carvalho (2007), that studied the saline of the RN and investigated the main characteristics of the measurement of business performance used by the companies.

Alves's (2011) dissertation had as general objective to verify the positioning of saline industries in relation to the importance of logistics as a strategic tool used in minimizing logistics costs and maximizing economic-financial performance. Another paper was the thesis of Oliveira (2011) dealt with an investigation about the perceptions and practices of the saline businessman about corporate social responsibility.

Another sector with a high degree of concentration is mining. In fact, mining is a fast growing segment in the country. According to the *Instituto Brasileiro de Mineração* (IBRAM, 2011), since 2000, the demand for minerals was intensified, which boosted the value of Brazilian production, mainly from 2001 to 2011. In that period, the value of mineral production increased 550%, from 7,7 billion to 50 billion Reais, considering that, in general, in the country, production growth continues to evolve between 10% and 15% annually in the last three years, thus ensuring a positive increase for 2013.According to IBRAM (2011), the figures predicted, based on data collected from mining companies, showed significant investments of R$ 68,5 billion for the period 2011/2015, which means a new mining record. Based on the above data, the relevance of the mining activity to the country in terms of economic generation is observed.

Also worthy of note is the hospital services sector, which is also concentrated, especially when it focuses on private health plans such as the *Sociedade Cooperativa de Trabalho Médico* (UNIMED) and *Hospital Antônio Prudente* (HAPVIDA. Faced with this. Martins (2011) states that in Brazil the private health care sector involves more than forty million beneficiaries, of which approximately 85% are linked to health care plans with or without dentistry and 15% to dental plans only. The sector also brings together two operating companies and thousands of service providers among doctors, dentists and other health professionals in hospitals, laboratories, clinics and clinics.

2.2 Measuring business performance

As Neely and Bourne (2000) claims, at the beginning of the twentieth century, there was a concern about the need to carry out business measurement through financial indicators. The first companies to use these techniques were Dupont and General Motors, which makes them pioneers in this practice because they realized that by participating in a competitive market, they needed help to make secure decisions.

As Ghalayini and Noble (1996), the recognition of performance measures is made in two stages, the first in 1880, where indicators focused on measuring profit and productivity. In the second phase, in 1980, with the growth of business, there were changes and an evolution, in order to realize that the measures did not meet the needs of the organizations. From then on, the anticipated measures began to be met to meet a more demanding and competitive market.

According to Harif, Hoe and Ahmad (2013), in the business world, with decisions to be made all the time, the measurement process is significant from the point of view of issues such as: centralization of capital, division of risks inherent in productive enterprises and project monitoring. When these functions are controlled and fulfilled, the organization's economy reaches its maximum level of effectiveness.

The evaluation of corporate performance, according to Kassai (2002) is related to the verification of compliance with obligations by the entrepreneurs responsible for the organization's management.

Wanderley *et al*. (2010) portray that the methods of evaluating corporate performance, which previously were based only on accounting and financial indicators, are no longer considered sufficient. And it is in this context of changes that the emergence of several models of performance measurement is explained, in order to efficiently manage the corporate information (financial and non-financial) that support decision making. Companies are currently in the incessant search for such systems, thus generating the need for further studies on performance measurement systems.

As Menezes, Guimarães and Bido (2011) claim, to measure, in a general way, is an activity seen as necessary for the organizations, since the entrepreneur can measure the perception of the clients regarding organizational improvements, comparing with previous periods, as well as measuring the time of goods and services in the market, external customer complaints, cost of each commercial transaction, return on investment and company participation in the trade.

3 METHODOLOGY

The research has as main focus the saline companies of the State of the RN, which, in fact, form a concentrated and representative sector in the country in productive terms. According to the *Sindicato do Sal* (SIESAL) (2012), the sector is made up of 33 companies in the state of RN, which are active and registered. It was possible to compare this sector with companies from other sectors also concentrated such as mining and hospital services. Information on these other sectors was provided by *Revista Exame Melhores e Maiores* (2011, 2012) regarding data for the years 2010 and 2011.

Due to the production of salt depend on climatic conditions, these are the last years more consistent, since saline production began in 2010, while the harvest and sales occurred in 2011, facts that conclude the saline cycle in productive terms and profitability, considering that the data of such years are the most recent for the collection of research.

As for the approach, this is a quantitative investigation. For Cooper and Schindler (2011),

this approach is characterized by the use of quantification both in the information collection modalities and in the treatment of them by means of statistical techniques, from the simplest ones such as averages, absolute and relative frequencies and standard deviation, even the most complex, such as cluster analysis. As Corrar et al. (2009) claims, cluster analysis is one of the multivariate analysis techniques whose primary purpose is to gather similar objects, based on their characteristics.

3.1 Data collection

For the primary collection of the data, a recorded interview was made with the saline industry managers of the RN Statistic, based on a structured script involving open and closed questions, which sought to investigate on: aspects related to the measurement of performance and sustainability of the company, financial indexes and sustainable results. It was also a census study, since the research was carried out throughout the saline industry. Regarding the period of data collection, it occurred from June 2012 to December 2013.

The data collected from the mining and health sectors are exclusively financial. The information was obtained through documentary data available in the *Revista Exame Melhores e Maiores* (2011, 2012), for the years 2010 and 2011 in which the North and Northeast regions are highlighted. In relationtothe mining companies, there are five: *Alunorte*, *Vale Potássio Nordeste*, *Mineração Caraíba*, *Mineração Paragominas* and *Mineração do Rio Grande do Norte* (MRN). Regarding hospital services, there are three companies: UNIMED Fortaleza, UNIMED Belém and HAPVIDA Fortaleza. According to the aforementioned magazine, these companies were highlighted in economic and financial growth in the years 2010 and 2011. They were compared with the saline industry because they present similar characteristics of concentration in the sectors in which they operate.

3.2 Data processing

All data from the survey were tabulated in the statistical program Statistical Package for the Social Sciences -SPSS version 20. The salaries were computed for the years 2010 and 2011, taking into account the following variables: gross revenue, costs and expenses, total assets, third party capital over total resources, average sales term, average stock renewal term and average purchase payment term. The other variables are internal and external social indicators, as well as socio-environmental indicators. These are found in the social balance sheet and deal with social investments in education, professional training, health and, in general, social benefits that can be within the company or externally, acting alongside social and / or environmental related actions. These pointers were evaluated in those years by descriptive statistics. As Corrar *et al*. (2009) claim, the descriptive statistic allows to know the lowest and highest value found in each variable as well as to determine its mean and its standard deviation among other measures.

The clusters analysis technique was a tool used in the saline industry to observe the similarity between companies. According to Malhotra (2001), the analysis of clusters or clusters is a technique used to classify objects into relatively homogeneous groups, called conglomerates.

In the opinion of Hair *et al*. (2005), cluster analysis is a group of multivariate techniques whose primary purpose is to aggregate objects based on their characteristics. The grouping is done from a predetermined criterion, highlighting the existing similarities. The criterion used was the hierarchical analysis, used to identify the groups of observations, using a digit that starts with a cluster and combines the observations until forming the whole group. The figure used was based on Euclidean distance.

$$d(\boldsymbol{x}, \boldsymbol{y}) = \sqrt{\sum_{i=1}^{p} (x_i - y_i)^2}$$

This equation represents the distance measure used between the p variables of each object X and Y.

The test (Chi-Square) was used to verify if the companies included in clusters 1, 2 and 3 of the social grouping were the same ones that belonged to groups 1, 2 and 3 of the financial grouping.

Descriptive statistics were also applied in the mining and hospital services sectors in 2010 and 2011. The variables considered were: adjusted net income (in US$), adjusted shareholders' equity (in US$), legal profitability (in%), and Earning Before Interests, Taxes, Depreciation and Amortization (EBITDA) (in US$). In view of these procedures, it was possible to compare the net income growth of the three sectors under study.

To close the data treatment, the concentration level of the salt, mining and hospital services sectors was investigated, based on the "Concentration Ratio" and "Herfindahl-Hirschman (HH)" indexes. For Resende and Boff (2012), the "Concentration Ratio" ratio measures the proportion of a fixed number of companies in the industry and ranges from 0 to 100, and the closer to 100, the higher the concentration.

According to Bain (1968), the ratio of Concentration Ratio can be represented by the formula:

$$Cr\ (k) = \sum_{i=1}^{n} P_i$$

On what:

n = number of firms that are part of the calculation;

P*i* = participation of the i-th firm in the market.

The HH index, according to Kon (1994), is defined by the sum of the squares of the participation of each organization in relation to the total size of the sector, as follows in the following formula:

$$HH = \sum_{i=1}^{n} P_i^2$$

On what:

n = number of firms that are part of the calculation;

P*i* = participation of the i-th firm in the market.

For the calculation of the HH and "Concentration Ratio" indices, it was necessary to know the revenue of each company and divide it by the total revenue of the sector, obtaining the variables P*i* and P*i*². By means of the results, thus managing to assess the level of concentration of the sectors.

4 ANALYSIS OF RESULTS

A financial summary was elaborated based on minimum, maximum, average and standard deviations of the variables: gross revenue, cost and expenses, payroll, net profit and total assets, as can be seen in table 1, below. These variables were analyzed in percentage and real aspects in relation to the years of 2010 and 2011.

Table 1 - Financial summary of the variation of 2011 in relation to 2010

Financial Summary					
Variables	**N**	**Minimum**	**Maximum**	**Average**	**Standard deviation**
Gross revenue (in%)	33	-10,00	30,00	14,87	11,01
Gross Revenue (in R$)	33	,00	132.677.712,00	15.599.324,61	28.690.700,06
Costsandexpenses (in%)	33	-,10	50,00	12,33	11,42
Costs and expenses (in R$)	33	120.000,00	80.937.980,00	10.439.635,76	18.242.623,23
Payroll (in%)	33	,00	30,00	12,30	7,39
Payroll(in R$)	33	,00	20.000.000,00	2.109.090,10	3.605.810,51
Net income (in%)	33	-5,00	32,00	11,11	9,32
Net income (inR$)	33	,00	15.622.426,00	3.761.285,64	4.311.962,63
Total assets (in%) *	32	-12,00	86,00	11,95	17,52
Total assets (inR$) **	26	1.760.000,00	130.000.000,00	16.311.576,92	28.096.225,22

Source: Prepared by the authors (2013).

* One company did not respond.

** Six companies did not respond.

The change in gross revenue in percentages was the first element to be verified from 2010 to 2011, as can be seen in table 1. The average change in gross revenue in the saline sector was (14,87%) compared to 2010. The lower value was -10,00% which can be understood as a decrease, considering that production decreases in 2011. This can be evidenced in the maximum value of 30%.The increase in gross revenue was R$ 132.677.712,00, with an average of R$ 15.599.324,61, with a standard deviation of R$ 28.690.700,06 This represents high variability in company revenues. For Gartner (2010), while financial information is used within companies,

they also fuel analysis and decision-making.

The data shown in table 1 show that even in the face of the production crisis that the salt sector faced, average growth of 15% was obtained, according to the information collected. This development occurred due to the increase in product price in 2011.

The costs and expenses evaluate the expenses that the saline activity has to keep working. Evaluating the average percentage, there is an increase of 12,33% from 2010 to 2011. It should be noted that the maximum value was 50% indicating a significant increase of costs / expenses of a particular company. In relation to absolute values, the average cost was R$ 10.439.635,76, with the standard deviation of R$ 18.242.623,23. Given the data, it is well known that there was a similar percentage growth between revenues and costs.

The sector's payroll was also evaluated in percentages and reais, presenting an average growth of 12,30% corresponding to an increase of R$ 2.109.090,10. The standard deviation was R$ 3.605.810, 51. Most of the payroll refers to the large number of employees in the salt production area.

The lowest percentage decrease found in the variable net profit was -5% in relation to 2011, while the maximum increase was 32% (R$ 15.622.426,00) due to the balance caused by the reduction of production and price increase. It is observed that the sector as a whole increased its profits between 2010 and 2011, showing growth in the period.

As for total assets, which refers to all assets and rights that the company has, the saline sector grows by an average of 11, 95%, representing a financial magnitude of about 16 million reais.

When analyzing table 2, below, it is observed that third-party capital was another item taken into consideration. In the analysis for 2010, the average value was 4,95%, and in 2011 increased 5,45% represented an increase in the level of indebtedness. The analysis of this variable is relevant because, according to Matarazzo (2010), from the financial point of view, the greater the use of third-party capital, the less freedom of financial decisions. In view of this, the noth-riograndense saline has low level of financial indebtedness.

Table 2 - Financial summary of annual indicators

AnnualIndicators					
Variables	**N**	**Minimum**	**Maximum**	**Average**	**Standard deviation**
Third-party capital on total resources (indebtedness)% (2010)	33	,00	47,40	4,95	8,47
Third-party capital on total resources (indebtedness)(2011)	33	,00	38,80	5,45	7,88
Average sales term in 2010 (days)	33	,00	240,00	54,79	51,57
Average sales term in 2011 (days)	33	30,00	240,00	57,55	49,69
Average stock renewal term in 2010 (days)	33	,00	180,00	85,73	65,93
Average stock renewal term in 2011(days)	33	30,00	180,00	87,88	64,03
Average payment term for purchases in 2010 (days)	33	,00	90,00	40,10	21,51
Average payment term for purchases in 2011 (days)	33	7,00	90,00	42,64	18,86

Source: Prepared by the authors (2013).

Another variable analyzed in Table 2 was the average sales term, which in 2010 had an average of 54,79 days, showing a small variation in 2011.

As for the average term of stock renewal, there was also no change between 2010 and 2011, indicating that the sales deadlines were maintained in the period. In view of the results, the inventory renewal presents a situation almost static in relation to the analyzed years.

Regarding the variable average payment period of purchases, in 2010, the average value of 40,09 days and standard deviation of 21,51 were found. In 2011, this deviation reduced to 18,86 days, and the average rose to 42,64 days. Given the comparisons between the two years under analysis, the average term of sales had a variation of only 2,55 percentage points, which did not show significant changes in the period.

The internal and external social indicators are part of the social balance and deal with the social investments that the company destines for education, health, forest recovery, professional training, charity events, among others that involve employees or society in an internal or external way, as illustrated in table 3, below.

Table 3 - Statistical summary of social indicators

Social Indicators					
Variables	**N**	**Minimum**	**Maximum**	**Average**	**Standard deviation**
Internal social indicators (in 2010)	33	,00	2,00	,80	,72
Internal social indicators (in 2011)	33	,00	2,00	,80	,72
External social indicators (in 2010)	33	,00	2,00	,53	,65
External social indicators (in 2011)	33	,00	2,00	,53	,65
Social environmentalindicators (in 2010)	33	,00	2,50	1,12	,72
Social environmentalindicators (in 2011)	33	,00	2,50	1,12	,72

Source: Prepared by the authors (2013).

The internal social indicators in 2010 and 2011 had values equal to 0,80% while the external indicators were lower (0,53%) in the two years evidenced. Those of socio-environmental nature were represented by higher values of 1,12%.According to Khanafiah and Situngkir (2011), entrepreneurs still need to realize the value of investing in projects of internal and external social interest such as education, health and environmental protection, which are directly related to the company's image.

4.1 Cluster analysis of social and financial indicators

Next, the degree of similarity of the companies was analyzed, based on the conglomerate analysis.

The procedure was based on the variables "internal, external and environmental social indicators", and was applied for the years 2010 and 2011, as shown in table 4, below.

Table 4- Cluster centroids - social indicators

Social Indicators	Cluster		
	1	2	3
Interns 2010	,22	1,21	2,00
Interns 2011	,22	1,21	2,00
External 2010	,04	,79	2,00
Externallinks 2011	,04	,79	2,00
Environment 2010	,53	1,61	2,00
Environment 2011	,53	1,61	2,00

Source: Prepared by the authors (2013).

Based on the analysis of table 4, it is observed that the first cluster gives greater emphasis to environmental social indicators valued at 0,53, while external social indices showed a low degree of concern (0,04). The internal social indicator had value between the previous two of (0,22). In general, the first cluster presents few expressive values. In the second grouping, the indicators were higher, considering that the internal and environmental social variables presented a similar degree of importance respectively (1,21 and 1,61), while the external social identifier had a value of 0,79.

In view of the selected variables, the indicator of greatest investment in both cluster 1 and 2 was the socio environmental indicator, while the others alternated their level of importance in companies. For Melo, Almeida and Santana (2012), investments in social and environmental indicators have been part of the organizations, becoming increasingly evident, mainly due to the demands of government and society that value such issues in the economy.

The third cluster presents the companies that give greater emphasis to the internal, external and socio environmental environment. According to Donaire (2011), companies are still in a process of recognition, because in what refers to social and environmental issues, some organizations understand that investing in such variables constitute a strategy for better management.

Table 5, below, shows the ANOVA test result applied between the three clusters, indicating statistical significance for the differences between groups, in relation to all types of indicators.

Table 5 - ANOVA - social indicators

ANOVA						
Social Indicators	*Cluster*		Erro		F	Sig.
	Medium Squares	GL	Medium Squares	GL		
Internal social indicators in 2010	6,058	2	,145	30	41,904	,000
Internal social indicators in 2011	6,058	2	,145	30	41,904	,000
External social indicators in 2010	5,639	2	,070	30	81,047	,000
External social indicators in 2011	5,639	2	,070	30	81,047	,000
Social environmental indicators in 2010	5,596	2	,177	30	31,533	,000
Social environmental indicators in 2011	5,596	2	,177	30	31,533	,000

Source: Prepared by the authors (2013).

When considering a level of significance of 0,05, the differences between the three indicators in the three clusters found can be considered significant, as shown in table 5.

Next, we performed analysis of conglomerates using financial variables, and the following results were obtained. The variables refer to:

a) percentage of gross revenue variation between 2010 and 2011;

b) percentage of change in net income between 2010 and 2011;

c) percentage of variation of total assets between 2010 and 2011.

Table 6- Cluster centroids - financial indicators

Financial Cluster	*Cluster*		
	1	**2**	**3**
Gross Revenue in%	,00	7,25	21,59
Net income in%	,00	4,92	15,42
Total assets in%	68,00	1,08	12,97

Source: Prepared by the authors (2013).

Based on the observation in table 6, above, it can be seen that the first cluster is characterized by the group of companies with high percentage of total assets, but that did not report revenues and profits.

Group 2 is composed of the companies that had higher revenues and profits, but which have low investments in total assets. It is possible to verify that these companies can generate good results with little investment in the total assets, which indicates effectiveness.

Finally, the latter group indicates the companies that had the highest financial performance in the three variables.

As Devinney, Yip and Johnson (2009) argue, companies that create value above their industry average gain competitive advantage. Coff (2010) also points out that by reasonably increasing its profits, the company ends up having a competitive advantage and can achieve other results in financial and organizational performance.

In view of the analysis, it was possible to compare the social and financial results obtained. It was observed that the companies in clusters 1, 2 and 3 of the social grouping are not the same as those belonging to groups 1, 2 and 3 of the financial grouping, but the statistical significance occurred at the level of 12% as shown by the test result $\chi 2$.

H_0 - Clusters are independent.

H_1 - Clusters are dependent

The resulting *p* - value was 0,12 as this value is above the 5% standard. It can not be said that the clusters have the same distribution, that is, they are independent.

Table 7, below, indicates that the three clusters can be considered as significantly differentiated in relation to financial indicators.

Table 7 - ANOVA - financial indicators

ANOVA						
Variables	***Cluster***		**Erro**		**F**	**Sig.**
	MediumSquares	**GL**	**MediumSquares**	**GL**		
Gross Revenue in%	975,525	2	66,589	29	14,650	,000
Net income in%	514,850	2	47,553	29	10,827	,000
Total assets in%	3859,513	2	61,764	29	62,488	,000

Source: Prepared by the authors (2013).

For Hair *et al*. (2005), the analyzed variables demonstrate their degree of significance when presenting type 1 error lower than 0,05, which implies values above the variables "gross revenue%", "net income %"and "total assets%" are significant.

4.2 Intersectoral comparison of financial indicators

For the comparison of the mining and health sectors, descriptive statistics were applied in order to find mean values and standard deviation based on the following variables: adjusted net income (in US$), adjusted shareholders' equity (in US$), legal profitability (%) and EBITDA (in US$), as shown in table 8, below.

Industry: Mining. Years: 2010-2011

Table 8 - Descriptive statistics of financial indicators - mining sector

Financial indicators			
Financial Data 2010	**N**	**Average**	**Standard deviation**
Net income in US $	3	64,70	50,90
Shareholders' equity adjusted in US $	3	1149,20	1537,99
Legal profitability in%	3	13,77	22,17
EBITDA in US $	3	164,43	91,78
Financial Data 2011	**N**	**Average**	**Standard deviation**
Net income in US$	5	5,70	61,72
Shareholders' equity adjusted in US$	5	884,02	1029,48
Legal profitability in%	5	11,10	18,18
EBITDA in US$	5	91,88	82,68

Source: Prepared by the authors (2013).

As can be seen in table 8, the mining sector shows a reduction in all financial variables considered: adjusted net income (in US$), adjusted shareholders' equity (in US$), legal profitability (%) and EBITDA (in US$) in the years 2010 to 2011.

In the case of the health sector, when observing table 9, below, it is noted that, except for shareholders' equity, all other financial indicators have been reduced from 2010 to 2011.

Industry: Health. Years: 2010-2011

Table 9 - Descriptive statistics of financial indicators - health sector

Financial indicators			
Financial Data 2010	**N**	**Average**	**Standard deviation**
Net income in US $	3	-2,30	10,47
Shareholders' equity adjusted in US $	3	17,93	58,26
Legal profitability in%	2	11,50	5,374
EBITDA in US $	3	8,97	8,74
Financial Data 2010	N	**Average**	**Standard deviation**
Net income in US $	2	-3,55	12,94
Shareholders' equity adjusted in US $	2	21,60	71,13
Legal profitability in%	1	8,60	0,00
EBITDA in US $	3	3,63	8,27

Source: Prepared by the authors (2013).

When comparing the analyzed sectors, it was found that mining and hospital services decreased in the 2010 net profit variable in relation to 2011, respectively -91.2% and -54,4%, respectively. Thus, among the three, the saline sector was the one that presented the best financial results, since its net profit increased by 11,11% as evidenced in table 1. This is certainly due to the typical economic inelasticity of salt, which makes it almost independent in relation to the other sectors to which it is positioned in the economy.

4.3 Degree of concentration

In another moment, the degree of concentration of the three sectors was analyzed: saline, mining and hospital services. According to Lopes (2012), concentration indices are necessary to measure the level of dominance that exists in a sector that develops an activity in a given region. They indicate that the higher the concentration, the lower the degree of competition. The main indexes used were "Concentration Ratio" (CR), which ranges from 0 to 100. The other index is "Herfindahl-Hirschman" (HH), which assumes a value of 1 when there is only one company in the industry, forming a monopoly, and has values less than 1/*n* when companies have equal participation in the market. In this case, the following values were obtained:

Regarding the "Concentration Ratio" index, the analysis of table 10, below, allows to infer that the saline industry in the years studied (2010 and 2011) was the one with the highest concentration according to the literature, being represented by 0,911 and 0,9489, while mining had indexes of 0,1319 and 0,0527. Health presented its "Concentration Ratio" in 0,0316 and 0,0301, being configured as sectors that also represent concentration, but in a lower level than the saline.

Table 10- Concentration ratio index - (Pi)

Year	Sector		
	Saline	Mining	Health
2010	0,911	0,1319	0,0316
2011	0,9489	0,0527	0,0301

Source: Prepared by the authors (2013).

The HH index, applied in the saline sector, made up of 33 companies, in the years 2010 and 2011, had values of 12,74519497 and 8,67207571, indicating to be oligopoly, as shown in table 11, below. For Lopes (2012), this is a highly concentrated sector, since the RN is responsible for the country's largest salt production, covering up to 95% of production.

Table 11- Herfindahl-Hirschman Index (HH) – (^{2})

Year	Sector		
	Saline	Mining	Health
2010	12, 74519497	0,00772634	0,0003448
2011	8, 67207571	0,00106607	0,00030789

Source: Prepared by the authors (2013).

5 FINAL CONSIDERATIONS

The research had as objective to compare the business performance of the saline sector of the RN in the period of 2010/2011 with other sectors of mining and hospital services that present a high degree of concentration. It was possible to verify, through the analysis applied in the agglomerations of mining and hospital services, that there was a decrease in the profit of the two sectors of -91,2% and -54,4% respectively. Unlike the other companies, the saline sector was the best that stood out financially, as it presented a growth in net profit of 11,11%. One of the reasons explained by the saline was that, in 2010, the ton of salt cost R$ 140,00. As production fell in 2011, the price of the ton increased to R$ 180, 00, which led the industry to a positive financial result.

A panorama of the saline industry was shown, in relation to variables related to management, including the creation of clusters based on their characteristics. The first cluster analysis consisted of internal, external and environment-related social indicators. It was possible to identify that the first and second groups showed greater concerns with socio environmental indicators, while the third group showed equal interests in all variables. It was observed that the saline seems to understand that investments in such indicators are necessary and that they value sustainable and social practices, although they still invest a tiny percentage of the company's income in issues like these.

The second cluster analysis uses the variables: gross revenue, net income and total assets. The first group comes from the level of investment without, however, having increased in its revenues and profits. The second group increases moderately as revenues and profits, although there is growth in investments. The third group was the one that showed the best financial performance in all variables. In view of this, the saline sector shows itself financially in growth with positive results for the years under analysis.

It was verified through the test $\chi 2$ (Chi-Square) that the clusters of the social and finan-

cial clustering are independent.

Still, as far as financial performance is concerned, the noth-rio-grandenses saline has more capital than third-party capital, given that the sector was represented with 4,95% and 5,45% for 2010 and 2011, which shows financial independence and security in business decisions. Another aspect analyzed was the average sales deadlines, the renewal of stocks and purchases, the exercise currently existing and the existence of a series in the years taken into consideration. It is necessary that the salinity of the campaign almost has no inventory results, probably due to the greater domestic consumption no country and exports.

The degree of concentration was one more point verified among the sectors in the study. By means of the CR and HH indices, it was possible to verify that the saline industry was the one that had the highest concentration, since its values were the ones that were closer to one. These evidences showed that the RN salines represent an oligopolistic sector, since there is a distributed concentration among the industries of the saline industry.

One of the limitations of the research was the small amount of common variables to compare the three sectors. In spite of having tried to deepen the business aspects for the saline sector, the comparison with the two other sectors occurred with the use of few financial variables. In the meantime, it was possible to summarize the financial situation of the three agglomerates through the growth in profits and revenues presented.

As a suggestion for other studies, it would be possible to make use of more variables of an accounting / financial nature, in order to compare them with the business results obtained.

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