Executive remuneration and financial performance in Brazilian companies*

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Abstract: The objective of this study is to investigate the existence of a relationship between executive remuneration and financial performance in 28 Brazilian companies from the industrial sector. These companies have been selected among those companies elected as "The Best Companies to Work for in Brazil". In order to operationalize the remuneration variable, the authors use the monthly salary, the variable salary and three indexes—of benefits, career and professional development—which have been created especially for this survey. To measure financial performance, the authors use three accounting measures: sales growth, return on equity (ROE) and return on sales (ROS). The results point the existence of a relationship between executive remuneration and financial performance.

Key words: financial performance; Brazilian companies; executive remuneration; industrial sector

1. Introduction

The importance of operations management has increased in the last years. Globalization of markets, increasing competition, shorter product and service life-cycles, and new technology have increased pressures on the operations function to improve productivity and provide high-quality products and services. In this new scenario, operations function needs employees who are motivated and pledged with the goals of the company. The remuneration system is an important mechanism through which individual efforts are guided toward strategic business objectives.

Within the last few years, many researchers have tried to understand the nature of the relationship between executive remuneration and corporate financial performance. The underlying hypothesis is that the remuneration influences executive's behavior, which then, influences the company performance (Devers, Cannella, Reilly & Yoder, 2007).

The surveys that have studied the relationship between executive remuneration and corporate financial performance have mostly been carried out in United States, using data on American companies. These surveys have found little direct evidence of a positive relationship between executive remuneration and financial performance.

The lack of studies relating executive remuneration and corporate financial performance within the context of

* **Acknowledgement:** The authors thank the support received from PROGEP/FIA—Programa de Estudos em Gestão de Pessoas da Fundação Instituto de Administração.

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the Brazilian market has led the authors to carry out this research, with the objective to investigate the existence of a relationship between executive remuneration and financial performance in 28 Brazilian companies from the industrial sector.

Executive remuneration is measured in terms of the monthly salary, the variable salary and three indexes—of benefits, career and professional development—that we have created especially for this survey. Financial performance is measured in terms of sales growth, return on equity and return on sales. Both the data related to remuneration and the data related to financial performance are from year 2006. The study focuses on the remuneration received by directors, vice-presidents and company presidents.

The authors hope that this study expands knowledge about the relationship between executive remuneration and corporate financial performance, and thus provide grounds based on which the companies may improve their management systems.

2. Literature review and hypothesis

2.1 The concept of remuneration

There are several terminologies used to express the idea of remuneration. In Brazil, there is not on single terminology. Recently, there has been a growth in the use of the word remuneration in a wider sense, considering other factors besides the financial package. Fig. 1 shows the concept of remuneration that the authors will use in this study.

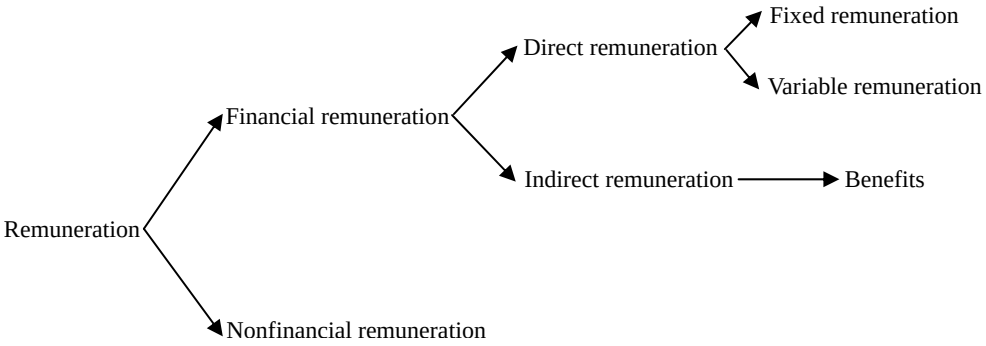

Fig. 1 The concept of remuneration

Data source: Prepared by the authors.

Financial remuneration is the “economic and/or financial compensation for work carried out by a person” (Dutra, 2002, p. 181). It can be divided into direct remuneration and indirect remuneration. Direct remuneration is the total cash amount received by the person in exchange for the work performed. It, in turn, includes fixed remuneration and variable remuneration (Chiavenato, 2000; Dutra, 2002).

Fixed remuneration is the cash amount previously agreed between the employee and the company, paid on a regular basis for the work carried out. Normally, this is related to tasks and also to the position that the person holds within the company (Dutra, 2002). Variable remuneration is the cash amount received by the person for having reached certain targets beforehand between the employer and the employee.

Indirect remuneration is represented by the benefits that the company offers to its employees in exchange for the work executed, in order to provide security and comfort (Dutra, 2002). Examples of benefits include: medical assistance, life insurance, retirement plan, company car and others.

Organizations regularly incorporate nonfinancial rewards in their compensation packages for employees (Carlon, Dows & West-Gray, 2006). Aspects regarding career and professional development are two of the nonfinancial factors that are incorporated most often.

Regarding career, the companies offer support for career planning, executive outplacement policy, internal recruitment program and professional promotion. In relation to professional development, companies have used a process of ongoing learning, in order to develop, in their employees, competences that are considered of critical importance for the business.

2.2 Financial performance

The concept of financial performance is a dominant element in empirical research. However, there is no consensus as to which measurements should be used (Carton & Hofer, 2006). In order to find out which measurements were being used to measure performance of companies, Carton and Hofer (2006) made a review of the empirical studies published from July 1996 to June 2001 in five different American journals: *Academy of Management Journal*, *Strategic Management Journal*, *Journal of Management*, *Journal of Business Venturing*, and *Entrepreneurship Theory & Practice*. The result was that out of the 1,045 papers that were analyzed, 138 used company performance as a dependent variable.

The authors identified 88 different indicators to measure performance. Of these 138 papers, 46% used only one indicator to measure performance, 25% used two indicators and the 29% remaining ones use more than two indicators. The profitability indicators appeared in 70% of the papers. Then came the growth indicators and in third the market-based indicators.

This review revealed that the performance concept has multiple dimensions, a view that is shared by other authors such as Chakravarthy (1986), Venkatraman and Ramanujam (1986, 1987) and Keats (1990). Therefore, performance has to be analyzed using more than one indicator.

Venkatraman and Ramanujam (1987) showed that the financial performance construct has at least two distinct dimensions: growth and profitability. Each of these dimensions may be described by one or more indicators. Profitability, for example, may be measured by indicators such as ROA, ROE and ROI. And growth may be measured by sales growth.

Carton and Hofer (2006) propose the use of more than one accounting indicator to operationalize the financial performance construct. They point out that:

- Nonfinancial indicators do not have a definition or a standard unit of measurement;
- Market-based measures may only be used by listed companies;
- Financial indicators are the most commonly used in empirical studies.

The authors admit that the financial indicators do show some shortcomings, but highlight the existence of two strong points:

- The researches have access to these indicators, which are made available by the companies, through their financial statements;
- There is uniformity in the way the data is presented, as the financial statements are prepared according to a strict set of rules, the generally accepted accounting principles (GAAP).

The authors investigate the existence of a relationship between executive remuneration (monthly salary, variable salary, benefits index, career index and professional development index) and corporate financial performance (sales growth, ROE and ROS). The hypothesis can be stated as follows:

Hypothesis: There is a significant relationship between executive remuneration and corporate financial

performance.

3. Methodology

The authors extract the data of the independent variables from the database held by Progep (Programa de Estudos em Gestão de Pessoas) of FIA (Fundação Instituto de Administração), responsible for the survey that annually chooses “The 150 Best Companies to Work For in Brazil”. This database contains information about human resource management of all the companies that take part in the survey. The authors use the remuneration received by directors, vice-presidents and company presidents in 2006.

The authors have extracted the data of the dependent variables from the database of FIPECAFI (Fundação Instituto de Pesquisas Contábeis, Atuariais e Financeiras) responsible for the survey that annually chooses “The 500 Best and Larger Companies in Brazil”. The authors choose this database as it brings together information about both public listed companies and privately owned companies. The data are from year 2006.

The authors choose industrial companies that have information in the two databases to compose the sample. Thus the non-probabilistic sample is composed of 28 Brazilian industrial companies. As the sampling technique used is non-probabilistic, it will not be possible to generalize the results obtained to the population as a whole.

The data related to remuneration includes:

(1) The executive’s average monthly salary in 2006, in Brazilian reais;

(2) Average amount received by the executive during the year of 2006, in Brazilian reais, as variable salary or bonus;

(3) Executives’ access to the following benefits: medical assistance, medical office in the company, dental assistance, subsidy of 50% or more to buy medicines, subsidy for less than 50% to buy medicines, psychological counseling, life insurance, subsidies for educational qualification, subsidies for professional specialization, subsidies for language studies, support to the executives’ children education, subsidy to buy housing, financing and loans;

(4) Executives’ access to 25 mechanisms for career planning. These mechanisms are divided into: process of planning and monitoring of professional development, support for career planning, executive outplacement policy, internal recruitment program, professional promotion, retirement program;

(5) Executives’ access to 8 mechanisms for professional development: educational programs that incorporate the identification of core competences, management systems that encourage the sharing of knowledge and the exchange of experiences, technology applied to education, company commitment to corporate citizenship, educational programs that reinforce the culture of the organization, involvement of leaders and managers with the learning process, systems for the assessment of the results of the investment in education, partnership with higher education institutions.

The authors use this information about benefits, career and professional development to develop 3 indexes: of benefits, career and professional development. In the database, each one of these information are classified as:

No (= the company does not offer to its executives);

Part (= the company offers to part of its executives);

All (= the company offers to all its executives).

To create indexes, the authors attribute a score from 0 to 2 as follows:

No = 0 points;

Part = 1 point;

All = 2 points.

For the benefit index, the value 2 was given to each benefit offered by the company to all its executives, the value 1 for each benefit offered by the company to part of its executives and 0 for each benefit that was not offered by the company to its executives. Then, the authors sum the points and divide them by the maximum score a company could get: 26 points (that is, the company offers all the benefits to all its executives). The percentage result corresponds to the benefit index.

For the career index, the authors use the same criteria. The value 2 was given to each mechanism for career planning offered by the company to all its executives, the value 1 for each mechanism for career planning offered by the company to part of its executives, and 0 for each mechanism for career planning that was not offered by the company to its executives. Then, the authors sum the points and divide them by the maximum score a company could get: 50 points (that is, the company offers all the mechanism for career planning to all its executives). The percentage result corresponds to the career index.

For the professional development index, the authors use the same procedure of the previous indexes. The value 2 was given to each mechanism for professional development offered by the company to all its executives, the value 1 for each mechanism for professional development offered by the company to part of its executives, and 0 for each mechanism for professional development that was not offered by the company to its executives. Then we sum the points and divide by the maximum score a company could get: 16 points (that is, the company offers all the mechanism for professional development to all its executives). The percentage result corresponds to the professional development index.

The authors select three financial indicators to measure corporate financial performance: sales growth, return on equity and return on sales. The following factors were taken into consideration to choose such indicators:

(1) Most of the industrial companies are not listed in the stock market. Therefore, it would not be possible to use market-based indicators;

(2) The indicators chosen are very used by researchers to measure corporate financial performance.

The authors choose the size of the company as control variable, and use the natural logarithm of the number of employees. For data tabulation, the authors use the statistical program SPSS, version 16.0 for Windows. To verify the existence of a relationship between variables, the authors use: Mann-Whitney test, Pearson correlation test and regression analysis.

4. Results

In 2006, 28 sample companies together employed 115,233 employees, and the sum of the gross sales of these companies represents about 10% of Brazilian GDP 2006.

First, the authors present the descriptive statistics of the data extracted from Progep database. Table 1 shows the benefits that the companies offer to their executives. All the sample companies offer “medical assistance” to all their executives.

Eighteen companies offer to all their executives “medical office in the company”. “Dental assistance” is offered by 89.3% of the companies to all their executives. “Life insurance” is offered to all the executives by 25 companies. “Subsidy to buy housing” is not offered to the executives on 89.3% of the companies. And “financing and loans” is offered to all the executives by 78.6% of the companies.

Table 1 Benefits offered by the companies to executives

Benefits	No		Part		All	
	n	%	n	%	n	%
Medical assistance	-	-	-	-	28	100.0
Medical office in the company	5	17.9	5	17.9	18	64.3
Dental assistance	3	10.7	-	-	25	89.3
Subsidy of 50% or more to buy medicines	23	82.1	-	-	5	17.9
Subsidy of less than 50% to buy medicines	25	89.3	-	-	3	10.7
Psychological counseling	7	25.0	1	3.6	20	71.4
Life insurance	3	10.7	-	-	25	89.3
Subsidies for educational training	9	32.1	1	3.6	18	64.3
Subsidies for professional specialization	2	7.1	2	7.1	24	85.7
Subsidies for language studies	5	17.9	1	3.6	22	78.6
Support for children's education	15	53.6	3	10.7	10	35.7
Subsidy to buy housing	25	89.3	-	-	3	10.7
Financing and loans	6	21.4	-	-	22	78.6

Twenty three companies have a formal process of planning professional development, and this process is offered to all the executives. This process is conducted regularly, at least once a year, and as a result of this, a plan is developed on 85.7% of the companies (see Table 2).

Table 2 Process of planning and monitoring of professional development

Process of planning and monitoring professional development	No		Part		All	
	n	%	n	%	n	%
The process is conducted on a regular basis, at least once a year.	4	14.3	1	3.6	23	82.1
A development plan is set up as a result of the assessment process.	4	14.3	-	-	24	85.7
The process involves the establishment of performance targets and objectives.	5	17.9	1	3.6	22	78.6
The process involves the assessment of development of competences.	7	25.0	-	-	21	75.0

Table 3 Support for career planning

Support for career planning	No		Part		All	
	n	%	n	%	n	%
There are courses or events for career planning.	11	39.3	3	10.7	14	50.0
There is a library, manuals or software packages for career planning.	15	55.6	1	3.6	12	42.9
There is career counseling through structured meetings with immediate management or other people as appointed by the company.	12	42.9	4	14.3	12	42.9
There are groups of executives helped by professionals of the company or people who have been hired specially to implement career counseling.	16	57.1	4	14.3	8	28.6
The practice of counseling has been taken up.	18	64.3	5	17.9	5	17.9
The practice of coaching has been taken up.	9	32.1	7	25.0	12	42.9
The practice of mentoring has been taken up.	18	64.3	5	17.9	5	17.9

Table 3 shows the support for career planning. Fourteen companies offer courses or events to all their

executives. Five companies offer to all their executives the practice of counseling, twelve offer the practice of coaching to all their executives; and five companies offer to all their executives the practice of mentoring.

The outplacement policy is offered by 50% of the companies to all their executives. Ten companies do not monitor the process of executive outplacement (see Table 4).

Table 4 Outplacement policy

Outplacement policy	No		Part		All	
	n	%	n	%	n	%
The outplacement policy is applied to executives.	7	25.0	7	25.0	14	50.0
The company regularly and systematically monitors the process of executive outplacement.	10	35.7	5	17.9	13	46.4

Fifteen (53.6%) companies offer internal recruitment program to all their executives. On 39.3% of the companies, the executives do not take part in the process for establishing the criteria for career progression (see Table 5).

Table 5 Internal recruitment program

Internal recruitment program	No		Part		All	
	n	%	n	%	n	%
The internal recruitment program is offered to executives.	13	46.4	-	-	15	53.6
The executives took part in the process for establishing the criteria for career progression.	11	39.3	2	7.1	15	53.6

Only 11 companies offer to all their executives a career plan that is structured and formalized. On 12 companies, the executives do not know the requirements for access to the posts mentioned in the career plan (see Table 6).

Table 6 Professional promotion

Professional promotion	No		Part		All	
	n	%	n	%	n	%
The career plan is structured, formalized and practiced.	12	42.9	5	17.9	11	39.3
There is complete information about the career processes on notice boards and/or on the intranet.	18	64.3	3	10.7	7	25.0
The requirements for access to the posts mentioned in the career plan are well known to the executives.	12	42.9	6	21.4	10	35.7
Changes to the career processes are informed to the executives at least once a year.	16	57.1	3	10.7	9	32.1

Only 13 companies offer to their executives a retirement program. And on 12 companies this program involves financial aspects (see Table 7).

The results point that companies are offering to their executives some support for professional development. The perspective of professional development in the company is the most value aspect to executives (FIA, 2008). So, there are some opportunities that can be explored by the companies.

Table 8 shows the mechanisms for professional development offered by the companies to their executives. On 24 companies, all the executives have access to educational programs that are conceived based on the identification of competences.

Table 7 Retirement program

Retirement program	No		Part		All	
	n	%	n	%	n	%
The company has taken up a retirement program.	13	46.4	2	7.1	13	46.4
The program involves financial aspects.	16	57.1	-	-	12	42.9
The program involves a career transition to other activities, after the retirement process.	20	71.4	1	3.6	7	25.0
The program includes psychological assistance to the person who is to retire.	19	67.9	2	7.1	7	25.0
The program involves the family of the person who is to retire.	21	75.0	2	7.1	5	17.9
The company has a program for relationships and/or contact with retired executives.	21	75.0	-	-	7	25.0

Table 8 Professional development

Professional development	No		Part		All	
	n	%	n	%	n	%
The educational actions and programs are conceived based on the identification of competences (corporate and human).	3	10.7	1	3.6	24	85.7
There are formal management systems aimed at encouragement of sharing knowledge and exchanging experiences.	5	17.9	5	17.9	18	64.3
Technology applied to education is intensely used.	11	39.3	5	17.9	12	42.9
The programs reinforce the commitment of the company towards corporate citizenship.	5	17.9	5	17.9	18	64.3
The programs are aimed at the strengthening and publicizing of the culture of the organization.	3	10.7	-	-	25	89.3
The leaders and managers are responsible for the learning process.	2	7.1	7	25.0	19	67.9
In assessment of the results of the investments in education, the aims of the business are taken into consideration.	6	21.4	4	14.3	18	64.3
There is the formation of partnerships with higher education institutions.	11	39.3	2	7.1	15	53.6

Table 9 shows the average monthly salary and average variable salary of executives in 2006. Not all the companies pay a variable salary to their executives. The average monthly salary is R$ 28,087.27, with the smallest and largest values being R$ 14,021.28 and R$ 52,000.00, respectively. The average variable salary is R$ 176,404.72.

Table 9 Average salary of executives in 2006

	n	Mean	Standard deviation	Minimum	Maximum
Average monthly salary (in Brazilian reais)	28	28,087.27	8,390.53	14,021.28	52,000.00
Average variable salary (in Brazilian reais)	28	176,404.72	147,910.00	0.00	4,471,120.00

The benefits index measures executives' access to 13 benefits and ranges from 46.15% to 92.31%. The career index measures the support to career planning offered by the companies to their executives and ranges from 4.00% to 86.00%. The professional development index measures the mechanisms for professional development offered by the companies to their executives and ranges from 0.00% to 100.00%. Any companies do not offer any

mechanism for professional development while another companies offer all the mechanism. The average sales growth is 4.03%, the average ROE is 17% and the average ROS is 6.46%. The natural logarithm of number of employee ranges from 5.98 to 9.91 (see Table 10).

Table 10 Descriptive statistics

	n	Mean	Standard deviation	Minimum	Maximum
Benefits index (%)	28	63.60	12.05	46.15	92.31
Career index (%)	28	48.14	19.48	4.00	86.00
Professional development index (%)	28	72.99	26.47	0.00	100.00
Sales growth (%)	28	4.03	11.40	-14.10	27.40
ROE (%)	28	17.00	24.77	-79.90	64.40
ROS (%)	28	6.46	6.98	-2.70	26.30
Size (ln number of employees)	28	7.81	1.06	5.98	9.91

After the descriptive statistics, the authors present the results of the tests. The sample size is small, so the authors use nonparametric test. Using the median, the authors form two independent groups of companies:

Low—companies which values of independent variables are lower than median;

High—companies which values of independent variables are higher than median.

Then, the authors use Mann-Whitney test to test the null hypothesis that the population mean are the same for the two groups. The results presented in Table 11 show *p*-value>5%. Thus, the null hypothesis for sales growth, return on equity and return on sales could not be rejected.

Table 11 Mann-Whitney test for average monthly salary

Ranks

Average monthly salary		n	Mean rank	Sum of ranks
Sales growth (%)	Low	14	13.57	190.00
	High	14	15.43	216.00
	Total	28		
ROE (%)	Low	14	14.93	209.00
	High	14	14.07	197.00
	Total	28		
ROS (%)	Low	14	15.79	221.00
	High	14	13.21	185.00
	Total	28		

Test statistics [b]

	Sales growth (%)	ROE (%)	ROS (%)
Mann-Whitney U	85.000	92.000	80.000
Wilcoxon W	190.000	197.000	185.000
Z	-0.597	-0.276	-0.827
Asymp. Sig. (2-tailed)	0.550	0.783	0.408
Exact Sig. [2*(1-tailed Sig.)]	0.571[a]	0.804[a]	0.4276[a]

Notes: a. Not corrected for ties. b. Grouping variable: average monthly salary.

We can reject the null hypothesis for sales growth (see Table 12). But we cannot reject H_0 for ROE and ROS. So companies that offer larger amount as variable salary show higher levels of sales growth.

Table 13 shows *p*-value<5%. So we can reject the null hypothesis for: sales growth, ROE and ROS.

Companies that offer a wider range of benefits to most of their executives show higher levels of financial performance.

Table 12 Mann-Whitney test for average variable salary

Ranks				
Average variable salary		n	Mean rank	Sum of ranks
Sales growth (%)	Low	12	9.42	113.00
	High	12	15.58	187.00
	Total	24		
ROE (%)	Low	12	11.67	140.00
	High	12	13.33	160.00
	Total	24		
ROS (%)	Low	12	11.33	136.00
	High	12	13.67	164.00
	Total	24		

Test statistics [b]			
	Sales growth (%)	ROE (%)	ROS (%)
Mann-Whitney U	35.000	62.000	58.000
Wilcoxon W	113.000	140.000	136.000
Z	-2.136	-0.577	-0.808
Asymp. Sig. (2-tailed)	0.033	0.564	0.419
Exact Sig. [2*(1-tailed Sig.)]	0.033[a]	0.590[a]	0.443[a]

Notes: a. Not corrected for ties; b. Grouping variable: average variable salary.

Table 13 Mann-Whitney test for benefits index

Ranks				
Benefits index		n	Mean rank	Sum of ranks
Sales growth (%)	Low	16	11.31	181.00
	High	12	18.75	225.00
	Total	28		
ROE (%)	Low	16	10.50	168.00
	High	12	19.83	238.00
	Total	28		
ROS (%)	Low	16	10.69	171.00
	High	12	19.58	235.00
	Total	28		

Test statistics [b]			
	Sales growth (%)	ROE (%)	ROS (%)
Mann-Whitney U	45.000	32.000	35.000
Wilcoxon W	181.000	168.000	171.000
Z	-2.368	-2.971	-2.832
Asymp. Sig. (2-tailed)	0.0184	0.003	0.005
Exact Sig. [2*(1-tailed Sig.)]	0.017[a]	0.002[a]	0.004[a]

Notes: a. Not corrected for ties; b. Grouping variable: benefits index.

The results of the test for career index show *p*-value>5% (see Table 14). We cannot reject the null hypothesis for sales growth, ROE and ROS.

We can reject the null hypothesis for sales growth at the 0.10 level (see Table 15). Companies that offer mechanisms for professional development to most of their executives show higher level of sales growth.

Summarizing, the results of Mann-Whitney test point:

(1) There is a relationship between variable salary and sales growth;

(2) There is a relationship between benefits index and sales growth;

(3) There is a relationship between benefits index and ROE;

(4) There is a relationship between benefits index and ROS;

(5) There is a relationship between professional development index and sales growth.

Table 14 Mann-Whitney test for career index

Ranks				
Career index		n	Mean rank	Sum of ranks
Sales growth (%)	Low	14	13.71	192.00
	High	14	15.29	214.00
	Total	28		
ROE (%)	Low	14	13.50	189.00
	High	14	15.50	217.00
	Total	28		
ROS (%)	Low	14	12.68	177.50
	High	14	16.32	228.50
	Total	28		

Test statistics [b]			
	Sales growth (%)	ROE (%)	ROS (%)
Mann-Whitney U	87.000	84.000	72.500
Wilcoxon W	192.000	189.000	177.500
Z	-0.505	-0.643	-1.172
Asymp. Sig. (2-tailed)	0.613	0.520	0.241
Exact Sig. [2*(1-tailed Sig.)]	0.635a	0.541a	0.246a

Notes: a. Not corrected for ties; b. Grouping variable: career index.

Table 15 Mann-Whitney test for professional development index

Ranks				
Professional development index		n	Mean rank	Sum of ranks
Sales growth (%)	Low	16	12.25	196.00
	High	12	17.50	210.00
	Total	28		
ROE (%)	Low	16	14.56	233.00
	High	12	14.42	173.00
	Total	28		
ROS (%)	Low	16	14.62	234.00
	High	12	14.33	172.00
	Total	28		

Test statistics [b]			
	Sales growth (%)	ROE (%)	ROS (%)
Mann-Whitney U	60.000	95.000	94.000
Wilcoxon W	196.000	173.000	172.000
Z	-1.671	-0.046	-0.093
Asymp. Sig. (2-tailed)	0.095	0.963	0.926
Exact Sig. [2*(1-tailed Sig.)]	0.100[a]	0.982[a]	0.945[a]

Notes: a. Not corrected for ties; b. Grouping variable: professional development index.

To verify the association degree between variables, the authors use Pearson correlation test (see Table 16). The results of this test point:

(1) There is a positive correlation between benefits index and sales growth (r = 0.34);

(2) There is a positive correlation between benefits index and ROS (r = 0.36).

Table 16 Pearson correlation matrix

Variables	1	2	3	4	5	6	7	8	9
Monthly salary	1								
Variable salary	0.65**	1							
Benefits index	-0.07	-0.01	1						
Career index	0.35	0.47*	0.32	1					
Professional development index	-0.23	-0.05	0.44*	0.32	1				
Size	0.21	0.63**	0.02	0.25	0.11	1			
Sales growth	0.16	0.24	0.34#	0.22	0.24	0.26	1		
ROE	0.13	0.01	0.25	0.10	0.02	-0.10	0.54**	1	
ROS	0.11	0.07	0.36#	0.17	0.01	-0.11	0.33	0.56**	1

Notes: ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed); # Correlation is significant at the 0.10 level (2-tailed).

The authors use regression linear analysis to test our hypothesis that there is a significant relationship between executive remuneration and corporate financial performance. First, using simple regression analysis, the authors test the following model:

$$FP_i = \beta_0 + \beta_1 Remuneration_i + \varepsilon_i \quad (1)$$

Where:

i = 1,…, n;

FP = financial performance (sales growth, ROE, ROS), (used alternately);

Remuneration = monthly salary, variable salary, benefits index, career index, professional development index), (used alternately);

ε = error.

Only two regression models are significant. Table 17 to Table 19 present the results of regression analysis using sales growth as the dependent variable and benefits index as independent variable.

Table 17 Model summary

Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate
1	0.344[a]	0.118	0.084	10.9130

Note: a. Predictors: (Constant), Benefits index.

Table 18 ANOVA[b]

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	414.726	1	414.726	3.482	0.073[a]
	Residual	3,096.455	26	119.094		
	Total	3,511.181	27			

Notes: a. Predictors: (Constant), Benefits index; b. Dependent variable: Sales growth (%).

The *F* statistic calculated is 3.482 (*p*-value=0.073), with rejection of H_0 and therefore acceptance of the model. The adjusted *R*-square is 0.084. The benefits index explains 8.4% of the variation in sales growth. The distribution of standardized residues has a mean of zero and a standard deviation of 0.98 with the non-rejection of the normality of the distribution through the Kolmogorov-Smirnov test. The Durbin-Watson test shows a value of 1.968, showing absence of self-correlation of residues. The Pesarán-Pesarán test does not reject the null hypothesis that the residues are homocedastic. The results suggest that there is a statistically significant relationship between benefits index and sales growth.

Table 19 Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std error	Beta		
1	(Constant)	-16.654	11.276		-1.477	0.152
	Benefits index	0.325	0.174	0.344	1.866	0.073

Note: a: Dependent variable: Sales growth (%).

Table 20 to Table 22 present the regression analysis results for return on sales as the dependent variable and benefits index as independent variable.

The *F* statistic calculated is 3.859 (*p*-value=0.060), with rejection of H_0 and therefore acceptance of the model. The adjusted *R*-square is 0.096. The benefits index explains 9.6% of the variation in return on equity. The distribution of standardized residues has a mean of zero and a standard deviation of 0.98, with the non-rejection of the normality of the distribution through the Kolmogorov-Smirnov test. The Durbin-Watson test shows a value of 1.548, showing absence of self-correlation of residues. The Pesarán-Pesarán test does not reject H_0, the residues are homocedastic. The results suggest that there is a statistically significant relationship between benefits index and ROS.

Table 20 Model summary

Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate
1	0.360[a]	0.129	0.096	6.6331

Notes: a. Predictors: (Constant), benefits index.

Table 21 ANOVA[b]

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	169.808	1	169.808	3.859	0.060[a]
	Residual	1143.939	26	43.998		
	Total	1313.747	27			

Notes: a. Predictors: (Constant), Benefits index; b. Dependent variable: ROS (%).

Table 22 Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	-6.776	6.853		-0.989	0.332
	Benefits index	0.208	0.106	0.360	1.965	0.060

Note: a: Dependent variable: ROS (%).

Using multiple regression analysis, the authors test the model:

$$FP_i = \beta_0 + \beta_1\, monthly\ salary_i + \beta_2\, variable\ salary_i + \beta_3\, benefits\ index_i + \beta_4\, career\ index_i + \beta_5\, professional\ development\ index_i + \beta_6\, size_i + \varepsilon_i \quad (2)$$

Where:

$i = 1, \ldots, n$;

FP = financial performance (sales growth, ROE, ROS) (used alternately);

ε = error.

The results of multiple regression tests are not significant. The F statistics calculated for each model present p-value>5%. So, we cannot reject the null hypothesis (H_0: $\beta_1 = \beta_2 = \ldots = \beta_6 = 0$) that all the coefficients are simultaneously equal zero.

5. Conclusion

Operations function needs motivated employees to improve productivity and provide high-quality products and services. The remuneration system is an important mechanism that it can help to operations function to reach these goals.

The objective of this study is to investigate the existence of a relationship between executive remuneration and financial performance in 28 Brazilian companies from the industrial sector. This survey focuses on the remuneration received by directors, vice-presidents and company presidents.

To operationalize the remuneration, the authors use the monthly salary, the variable salary and three indexes—of benefits, career and professional development—which have been created especially for this survey. To measure financial performance, the authors use three accounting indicators: sales growth, return on equity and return on sales.

The results of Mann-Whitney test suggest that there is a relationship between: variable salary and sales growth, benefits index and sales growth, benefits index and return on equity, benefits index and return on sales and professional development index and sales growth.

Pearson correlation test points a positive correlation between benefits index and sales growth, and between benefits index and return on equity. The results of simple regression analyses show a statistically significant relationship between benefits index and sales growth, and between benefits index and return on sales.

Although there is strong support for the hypothesis that there is a relationship between executive remuneration and corporate financial performance, the results of multiple regression analysis are not significant. Thus, new researches need to be developed.

This survey has some limitations. The companies selected for the sample are benchmarks in human resources management. This means that the sample may not be a true representation of industrial companies in general and, the results of this survey may not be generalized to the population as a whole.

The independent variables may be operationalized in ways other than those used in this research study, which calculated three indexes and used them as a proxy, for remuneration of executives.

Most of the companies in the sample have closed capital. The fact that in Brazil it is not mandatory for these companies to disclose their financial statements makes it harder to obtain financial data. In addition, the problem of handling accounting results, like those that happened in the recent past, show that the financial indicators may not present a true picture of the companies' realities. Indeed, the manipulation of figures may lead to distortion in

the results of research.

In spite of these limitations, the results found are indeed relevant for a discussion about the relationship between executive remuneration and corporate financial performance.

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(Edited by Ruby and Chris)