

Proposal of a Salary Structure for Positions at Productos Caribe S.A.S in Cartagena-Colombia

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Abstract

The main resource of a company is its human talent, since it is thanks to the cooperation and contribution of employees and the performance of their roles that it is possible to achieve its objectives. Among the factors that most influence job satisfaction is the salary, since an employee who feels that he/she receives a fair payment for the activities he/she performs will remain happy with his/her job and with the organization in which he/she works. The personnel of Productos Caribe S.A.S. is presenting nonconformities related to remunerations because in 1979, the year when they started operations and the salary was established, the management did not take into account the importance of a remuneration that contemplated the specification and description of the positions and the dynamics of the sector in terms of salary for similar jobs. The objective of this research is to propose an equitable remuneration through a salary structure in which it is previously determined whether the salary earned corresponds to the skills and the physical and cognitive components required by each position, considering the external competitiveness and the compensation

Keywords

Job Position, income, Motivation, Compensation and Competitiveness

1. Introduction

Human talent constitutes a competitive advantage for a company through its contribution to the achievement of goals and the proper use of resources. This can be affected if employees work long hours in inadequate work environments, perform positions that do not have a clear definition of their functions or receive an inappropriate salary, which can cause a decrease in their motivation and impair their productivity.

One of the main reasons for job dissatisfaction is the remuneration assigned because, on occasions, it is not proportional to the job description and specification, causing workers to feel that their work is not adequately recognized and opt to look for new jobs in other companies, increase their absenteeism, among others. In order to avoid this problem, it is pertinent that every organization implements a compensation system that allows establishing the importance of the position taking into account their requirements and responsibilities to promote the development of a salary structure that defines the remuneration in a fair manner.

In addition, the salaries offered in the sector must be appreciated, because if the remuneration is lower for jobs with similar conditions and functions, it will not be possible to attract and retain qualified personnel and competitiveness in this area will be lower than that of the competition.

The following study is carried out with the intention of proposing a salary structure to the company Productos Caribe S.A.S. through the implementation of a compensation technique and the elaboration of a salary curve considering the remuneration dynamics of the market to establish a remuneration congruent to the functions of each position that contributes to improve the perception of the employee with respect to the organization and his job.

2. Literature Review

For a company to be competitive in an increasingly globalized environment, it is necessary to analyze several variables that directly or indirectly can affect its productivity. Salary is one of them, because if a deficient monetary amount is given to a job that has several responsibilities, then demotivation may occur among employees who perform it, generating problems in the efficiency within the organization (Desormeaux, 2010). Therefore, to mitigate this circumstance, management must establish well-defined policies for salary allocation.

2.1. Quantitative Compensation Method

The quantitative compensation method is characterized by making use of factors to determine the notability of jobs in a company (Urquijo, 2008). A factor could be defined as a common characteristic that the positions to be evaluated have in common but that has different relevance within them (Berrocal 2016).

2.1.1. Point Technique

This technique evaluates the position taking into account the four essential factors. These factors are divided into sub-factors and these in turn into grades, which are assigned a series of points through a previously established progression (Flores del Ángel, 2011). According to the Organización Internacional de Trabajo [OIT] in 2008, the four basic or essential factors that are present in any organization are those described below:

- **Ability:** It focuses on the knowledge required to perform the functions of the position and the necessary skills.
- **Responsibility:** It takes into account everything for which a person must respond from the moment he/she starts to perform the functions of the job.
- **Effort:** It indicates the difficulty and stress involved in the execution of the specific tasks of the job.
- **Work condition:** Refers to the characteristics and environmental conditions of the workplace.

Its procedure initially consists of the following three steps (Morales and Velandia 1999):

First step: Determine the jobs to be evaluated.

- The positions to be evaluated must share similar characteristics that do not necessarily require them to be of the same intensity.

Second step: Selection of key positions

- When the number of positions to be evaluated is less than or equal to 15, it is not essential to make a selection of them, which is why all of them can be considered for the study.

Third step: Selection and definition of compensable factors

- A factor is defined on the basis of what is described in the functions manual. For its elaboration, certain requirements must be considered:
 - It must be found in all or most of the positions to be evaluated.
 - That it be present with different intensities in the positions.
 - Each factor should study something different.
 - That education and minimum experience be considered only by the requirements demanded and not by what the workers actually have.

Once the positions and factors have been selected and defined, Gonzáles (2017) details the subsequent steps, citing those described by the OIT but with some modifications. It is important to mention that the author suggests that the number of factors should be between 8 and 12 because if it is lower than the range, some details of the jobs may not be taken into account and if it is higher, it may happen that the same thing is evaluated several times.

Fourth step: Determination and definition of factor grades

It is recommended to make a frequency distribution table using the technical requirements of each of the positions in order to delimit the maximum number of positions. There must be at least three degrees of intensity per factor.

Fifth step: Preparation of the master table

A table is constructed where the rows are the positions and the columns are the factors. Then, the grade is assigned to the factor in question according to the minimum compliance requirement for the job position.

Sixth step: Apply statistical filter for factor selection debugging

Initially, it is necessary to perform a statistical analysis in order to implement the filter. The following is a description of what should be considered:

- **Factor Mean (MF) and Job Mean (MC):** These are calculated to describe in a single value the data sample, either of the factors or of the jobs. The way to determine the former is by adding each grade and dividing the total by the number of grades of that factor, while for the latter the following formula is used:

$$\bar{X} = \frac{1}{N} \sum_{i=1}^N x_i$$

Where, N = Total number of positions and Xi = Sum of the score assigned for each position.

- **Coefficient of correlation between factors**

It is calculated using the linear correlation coefficient formula.

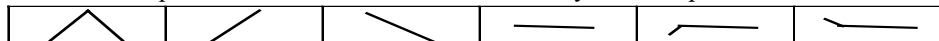
$$\rho_{xy} = \frac{cov_{xy}}{\sigma_x \sigma_y}$$

Where, covxy = The covariance between the values "X" (factor 1 of the pair) and "Y" (factor 2 of the pair), σ_x = Standard deviation of "X" and σ_y = Standard deviation of "Y".

Only those with a coefficient greater than 0.50 are considered for analysis since the two factors measure practically the same thing, so one should be dropped from the study. If a zero is obtained, they are not related and if it is a negative when one increases, the other decreases.

- **Frequency distribution**

The frequency distribution for each of the evaluated factors is analyzed. Its graph should be similar to those shown below because it indicates that the behavior of the factor manages to be predictable. If a trend is normal but has a pronounced asymmetry, it is mandatory to check the degrees of that factor. Bimodal and trimodal distributions are not acceptable because of the abnormalities they would represent.



- **Absolute difference between the means of the position and the factors (MD)**

It allows knowing how asymmetric the distribution is. Only those whose value is less than 0.10 are accepted. If it is too high, both factors and grades should be revised.

- **Determination of the intrinsic weight of the factors (Pi)**

Provides information as to whether all grades of the factor in question are present in a significant number of positions. It is calculated by applying the population deviation formula.

$$\sigma = \sqrt{\frac{\sum_{i=1}^N (X_i - \mu)^2}{N}}$$

Where; μ = Population mean, N = Population size and Xi = i value of variable X.

At the moment of evaluating the factor pairs, the one with the highest Pi is taken into account.

- **Coefficient of linear correlation between the factor and the salaries of the positions**

The purpose is to establish whether the factor has a direct or inverse relationship with the salary currently earned. The following expression is used to calculate this coefficient:

$$\rho_{xy} = \frac{cov_{xy}}{\sigma_x \sigma_y}$$

Where, covxy = the covariance between the values "X" (factor) and "Y" (current wage), σ_x = Standard deviation of "X" and σ_y = Standard deviation of "Y".

Those factors whose correlation coefficients are greater than $|\pm 0.50|$ are preferred.

In the statistical filter table, 1 is assigned to each requirement if it is met, otherwise 0 is assigned. Those that meet more than three parameters automatically enter the study. Those that obtain two, should be evaluated based on their relevance to the company and those with a total of one or less, are not considered.

Seventh step: Determination of the weighting of the factors

To construct the points table, it is necessary to calculate the combined weighting of the factors. The following should be taken into account:

- Intrinsic Weighting (Pi): Calculated in the previous step, it indicates the discriminating weight of each factor.

- Optimal Weighting (Po): It is a mechanism with which there is a common starting point for all the factors ($P_o = 1/P_i$) with the purpose of guaranteeing that the estimated weighting contributes according to the calculated value.
- Estimated Weighting (Pe): It is assigned with criteria established by the evaluators. It is recommended to follow the guidelines proposed below for non-managerial positions (table 1):

Table 1. Estimated weighting scale

Fundamental factor	Types of positions			
	Operators	Technical	Administrative	Sales
Ability	40% - 60%	45% - 65%	40% - 65%	40% - 65%
Responsibility	20% - 30%	20% - 30%	15% - 35%	15% - 30%
Effort	10% - 25%	10% - 20%	5% - 10%	8% - 15%
Working conditions	5% - 15%	5% - 15%	5% - 10%	5% - 12%

- Combined Weighting (PC): Result of the multiplication of the optimal weighting with the estimated weighting ($PC = P_o * P_e$). If the sum of these is greater than 100, an adjustment will have to be made.

Eighth step: Preparation of the scoring matrix

The grades of the master table are translated into importance values (points). For its elaboration, the arithmetic progression can be used considering the following:

1. Place the combined weighting in the first grade of each factor.
2. Use a scale in the combined weighting to establish the points for the maximum grade of each of the factors.
3. Assign points to the remaining or intermediate grades using the formula below to calculate the arithmetic ratio (Ra).

$$Ra = \frac{\text{Maximum Grade Points} - \text{Minimum Grade Points}}{N - 1}$$

Where N is the number of degrees for each factor,

Ninth step: Preparation of the relative valuation matrix

It results from combining the master table with the score table to determine the relative value of the charges in question by adding the points for each factor. A matrix of M rows (positions) and 2N columns (factors considering the grades and their respective scores) is necessary.

Tenth Step: Evaluation and application of corrections to the valuation matrix

The positions are organized in ascending order according to the relative value to carry out the corresponding analyzes and make the adjustments or corrections required for the design of the salary structure.

2.2 Salary Structure

The salary structure is a remuneration management tool that consists of establishing a series of ranges or bands that mark the maximum and minimum recommended remuneration for jobs in an organization (Ustrarroz and Gismera, 2018). The main pillar of a salary structure is the curve, since it is this that makes it possible to show whether there is a need to increase the salary congruent with the activities performed. For its construction, the information will be processed according to the procedure suggested by González (2017), which is described below:

1. Organize the relative values of the positions in ascending order, which were obtained from the master table.
2. Elaborate the scatter diagram, taking into account that X = relative value of position and Y = current salary.
3. Establish the trend line that best fits the data according to the coefficient of determination R^2 , which must be greater than or equal to 0.80, since this means that there is a high correlation between the variables. If more than one function representing the data yields an R^2 that meets the above condition, the choice will be made based on the principle of parsimony, which indicates that the simplest method, in this case the function, that meets the requirements should be selected (Berenson and Levine 1996).
4. Determine the upper and lower limits of the wage curve, which according to the literature is recommended to be a constant 20%, because this value provides equity between wages.
5. Design an interval scale that allows a study of the positions and their salaries grouped by category. The percentage of divergence between categories results from the difference between the upper limit of the category in question and

the lower limit of the next category divided by the difference between the upper and lower limit of the category in question (Otero 2014).

6. Delimit the minimum and maximum wages.
7. Carry out the salary reallocation based on the current salary for each position and the proposed salary.
8. Perform the salary leveling, which consists of establishing the difference between the proposed salary and the current salary, and then find the respective percentage increase.
9. Find the total cost that the new salary structure would represent to the company.

3. Methods

The compensation system selected is the point method because the ILO in 2008 mentioned it as the most appropriate method for job evaluation in terms of objectivity. Additionally, given its accuracy, it is one of the most applied techniques in the business environment because it is adaptable to the characteristics of each organization.

The study is structured in the phases described below:

1. Preliminary diagnosis to know the main causes of demotivation in the personnel by means of a job satisfaction survey.
2. Review of job portals endorsed by the Colombian Ministry of Labor in search of similar vacancies
3. Implementation of the quantitative compensation method, a technique for assigning points as described in the literature review. For the application of the technique it will be necessary to have a panel of experts, which will be formed by the human resources administrator, the assistant manager, the head of quality control (representing the employees) and the study's authors, who will determine factors, grades and estimated weighting.
4. Design of the salary structure based on the current salary earned and the relative value of the positions obtained in the application of the compensation system.
5. Preparation of conclusions and recommendations according to the results obtained in the salary structure.

4. Data Collection

In order to determine whether employees are really demotivated and the causes that would be generating it, the General Satisfaction Scale NTP 394 was applied to all staff, which is an adaptation to Spanish by Pérez-Bilbao and Fidalgo in 1995 of the General Satisfaction Instrument of Warr, Cook and Wall published in 1979 (Boluarte 2014). It is important to mention that anonymity was guaranteed to the participants taking into account the recommendations of the authors to ensure the validity of the responses (Páramo, Flores, & Díaz De León 2016).

Once the test was implemented, it was obtained that of the 15 variables considered, 5 had a rating between Very Dissatisfied and Moderately Dissatisfied. The results are as follows:

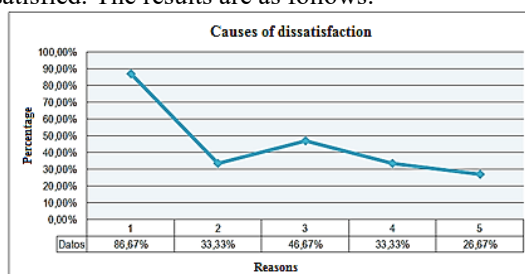


Figure 1. Causes of dissatisfaction and their percentages

Where,

Table 2. Reasons for dissatisfaction with their corresponding variables

Reason 1	Salary
Reason 2	Promotion possibilities
Reason 3	Attention paid to your suggestions
Reason 4	Recognition you get for a job well done
Reason 5	Variety of tasks you perform in your job

The figure 1 with table 2 show that although there are several causes that could be affecting motivation, 86.67% of the personnel surveyed agree that the salary received for the functions they perform is the main reason, so it is pertinent to analyze this variable and propose solutions to this problem in order to improve the work environment.

5. Results and Discussion

The salary that is managed in a given sector is one of the strategies that companies have to identify whether the remuneration they are offering to their workforce is attractive and if it contributes to the loyalty of workers. In view of the situation experienced in the company Productos Caribe S.A.S. regarding the dissatisfaction expressed by its employees in relation to the salary they receive, a comparison is made with the salaries offered in the market, taking as a source of information the employment service platform, a portal provided by the Ministry of Labor of Colombia. The currency is in Colombian peso (COP)

Table 3. Salary range offered by the market VS current salary Productos Caribe S.A.S

Job position	Lower limit	Upper limit	Current salary
Treasurer	\$1.100.000	\$1.500.000	\$ 1.050.000
Cleaning and cafeteria assistant	\$925.148	\$1.000.000	\$ 925.148
Production Manager	\$2.300.000	\$2.900.000	\$ 1.200.000
Production Assistant	\$925.148	\$1.300.000	\$ 925.148
Quality control manager	\$1.300.000	\$1.700.000	\$ 1.000.000
Tenders and contracts	\$1.000.000	\$1.400.000	\$ 1.000.000
Purchasing manager	\$1.200.000	\$1.600.000	\$ 1.070.000
Administrative secretary	\$925.148	\$1.100.000	\$ 1.100.000
Warehouseman	\$925.148	\$1.200.000	\$ 1.046.000
Human resources manager	\$1.800.000	\$2.500.000	\$ 1.200.000

From the above it can be seen that there are few positions for which the remuneration offered by Productos Caribe S.A.S. is within the established range, as offered by the competition, being the positions of cleaning and cafeteria assistant, administrative secretary, bids and contracts, warehouseman and production assistant the only ones that are in those ranges. On the other hand, all the positions that require a professional level are receiving a lower salary than the sector.

5.1. Selection of key positions, construction of factors and their respective grades

Prior to the implementation of the allocation by points, it is necessary to choose the key positions, however, Productos Caribe S.A.S. only has 10, which is less than the 15 required to make such selection. The panel of experts established the factors considering those that are present in different intensities in the positions and making use of direct observation in order to understand their complexity (table 4).

Table 4. Definition of factors and their degrees

	Factors	G1	G2	G3	G4
F1	Education	High school	Professional technician	Technologist	University professional
F2	Experience	1 years or less	More than 1 year or less than 2 years	More than 2 years or less than 4 years	More than 4 years
F3	Visual effort	Rarely	Occasionally	Frequently	Usually
F4	Physical Effort	It does not require	Requires little	Requires medium	Requires high
F5	Responsibility for Results	Low impact	Medium impact	High impact	
F6	Responsibility for machines and/or equipment	Equipment of COP \$1,000,000 or less	Equipment over COP \$1,000,000 or less than COP \$3,000,000	Equipment over COP \$3,000,000	
F7	Environmental conditions	Acceptable	A cumbersome component	Two cumbersome components	Three or more uncomfortable components
F8	Process and Quality Responsibility	Review the activities of your job	Review activities of group of people	Review activities in one area	

Ability

- Education: is the academic training required to perform a job position.
- Experience: is the period of time exercising functions in a similar position.

Responsibility

- Responsibility for Results: Responsible for the achievement of results and goals.

- Responsibility for Machines and/or equipment: Responsible for the proper operation of machines and/or equipment.
- Responsibility for Process and Quality: Responsible for the correct execution of the process.

Effort

- Physical effort: It is the exercise of motor activities that require energy consumption.
- Visual effort: Refers to the execution of activities that require the use of the sense of sight.

Working conditions

- Environmental conditions: Characteristics of the physical space where the worker performs his/her activities.

5.2 Assignment of grades to appraised positions

In the master table (table 5 and table 6) the most representative grade was assigned to each of the evaluated positions according to what is specified in the function manual of Productos Caribe S.A.S. in the corresponding factor.

Table 5. Master table

	F1	F2	F3	F4	F5	F6	F7	F8	Current salary (COP)
C1	4	3	1	1	2	1	1	2	\$1.050.000
C2	1	1	1	3	1	1	3	1	\$925.148
C3	4	4	3	4	3	3	4	3	\$1.200.000
C4	3	3	4	4	2	2	4	1	\$925.148
C5	4	3	3	3	3	3	2	2	\$1.000.000
C6	3	3	2	1	2	1	1	1	\$1.000.000
C7	4	3	3	2	3	1	1	2	\$1.070.000
C8	2	2	2	1	1	2	1	1	\$1.100.000
C9	2	2	4	4	2	2	3	1	\$1.046.000
C10	4	4	2	2	3	2	1	3	\$1.200.000

Where,

Table 6. Identification of charges

C1	Treasurer
C2	Cleaning and cafeteria assistant
C3	Production Manager
C4	Production assistant
C5	Quality control manager
C6	Tenders and contracts
C7	Purchasing manager
C8	Administrative secretary
C9	Warehouseman
C10	Human resources manager

The quality control manager receives the same salary as the bidding and contracts manager, however, his academic background and responsibilities are higher. On the other hand, the position of administrative secretary receives a higher salary than that of the head of purchasing, but they have descriptions and specifications with considerable differences.

1.1.3 Statistical filter

In order to determine whether the factors and their respective degrees are significant for the study, a statistical analysis is performed.

The preliminary statistical filter (table 7) provides the following information:

- The factors that obtained a mean difference (MD) of less than 0.10 do not have a considerable asymmetry, that is, the value of the mean of the factor (MF) is related to the value of the mean of the positions (MC), therefore the grades considered do correspond to the characteristics of the jobs

Table 7. Correlation matrix

Factors	MF	MC	DM	Pi	CORR. F/S	Correlation between factors							
						F1	F2	F3	F4	F5	F6	F7	F8
F1	2,500	3,100	0,600	1,044	0,493	1,000	0,901	0,140	-0,119	0,870	0,282	-0,243	0,773
F2	2,500	2,800	0,300	0,872	0,634		1,000	0,224	0,000	0,828	0,399	-0,075	0,793
F3	2,500	2,500	0,000	1,025	-0,022			1,000	0,689	0,391	0,522	0,520	-0,062
F4	2,500	2,500	0,000	1,204	-0,127				1,000	0,222	0,555	0,918	0,053
F5	2,000	2,200	0,200	0,748	0,498					1,000	0,429	-0,022	0,787
F6	2,000	1,800	0,200	0,748	0,376						1,000	0,460	0,411
F7	2,500	2,100	0,400	1,221	-0,224							1,000	-0,073
F8	2,000	1,700	0,300	0,781	0,780								1,000

According to the table 8 and as agreed by the panel of experts, the following is prescribed:

- Although factor 1 meets only two of the conditions to continue in the study, it is considered because the education required holding a position is paramount to achieve the vision proposed.
- Factor 2 is selected because it met three of the four required parameters.
- Although factor 3 achieved only two of the parameters, it is taken into account because of its high discriminatory power, low absolute difference between the averages and because of how representative it is for the workers.
- Although factor 4 obtained a score of two, it is included in the study because of its high discriminatory power and its importance for employees.
- Factor 5 is not selected because it meets only one parameter and has a low discriminatory power compared to F1 and F2.
- Factor 6 and factor 7 are not considered because they only met one parameter.
- Factor 8 is selected because it met three of the four required parameters.

Table 8. Statistical filter application result

Parameter	Couples with correlation coefficient greater than 0.50																					
	F1	F2	F1	F5	F1	F8	F2	F5	F2	F8	F3	F4	F3	F6	F3	F7	F4	F8	F4	F7	F5	F8
DF	0	1	0	1	0	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	1	1
DM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	0	1	0	0	0
Pi	1	0	1	0	1	0	1	0	1	0	0	1	1	0	0	1	1	0	0	1	0	1
CORR. F/S	0	1	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Total	1	2	1	1	1	2	3	1	3	2	1	2	2	1	1	1	2	2	1	1	1	3

Then, we proceed to determine the weighting for each of the factors based on their importance for the achievement of the company's quality policy (table 9).

Table 9. Factor weights

Factor	Pi	Po	Pe	PC	PC corrected
F1	1,04	0,96	56	54	32
F2	0,87	1,15	59	68	40
F3	1,02	0,98	12	12	7
F4	1,20	0,83	15	12	7
F8	0,78	1,28	18	23	14

1.1.1 Preparation of the scoring matrix and evaluation table

To establish the score for each of the grades of the factors selected in the study, the arithmetic progression with a scale of 1000 is used because it is recommended in the literature due to the convenience it provides at the time of interpreting the data.

Table 10. Scoring matrix

Factor	PC	RA	G1	G2	G3	G4
F1	32	95	32	127	223	318
F2	40	120	40	161	281	402
F3	7	21	7	28	49	69
F4	7	22	7	30	52	74
F7	14	62	14	75	137	14

From the table 10, the points are assigned taking into account the factor and its respective degree for each of the positions evaluated, with the intention of determining their relative value, that is, their importance in terms of score (table 11).

Table 11. Assessment of charges

Job position	F1		F2		F3		F4		F8		VR
	G	P	G	P	G	P	G	P	G	P	
C1	4	318	3	281	1	7	1	7	2	75	689
C2	1	32	1	40	1	7	3	52	1	14	144
C3	4	318	4	402	3	49	4	74	3	137	979
C4	3	223	3	281	4	69	4	74	1	14	661
C5	4	318	3	281	3	49	3	52	2	75	775
C6	3	223	3	281	2	28	1	7	1	14	553
C7	4	318	3	281	3	49	2	30	2	75	753
C8	2	127	2	161	2	28	1	7	1	14	337
C9	2	127	2	161	4	69	4	74	1	14	445
C10	4	318	4	402	2	28	2	30	3	137	914

Where G: Grade, P: Point, RV: Relative Value

1.1.1 Evaluation of the valuation matrix

The jobs are organized according to their relative value in an ascending order to see if there is any relationship with their current salary earned (table 12).

Table 12. Total relative value per position

Job position	VR	Current salary (COP)
C2	144	\$ 925.148
C8	337	\$ 1.100.000
C9	445	\$ 1.046.000
C6	553	\$ 1.000.000
C4	661	\$ 925.148
C1	689	\$ 1.050.000
C7	753	\$ 1.070.000
C5	775	\$ 1.000.000
C10	914	\$ 1.200.000
C3	979	\$ 1.200.000

1.1 Salary structure

Initially, the current salary (Y-axis) versus relative value (X-axis) graph is plotted using Excel's integrated tools and the coefficient of linear determination (R^2) is calculated

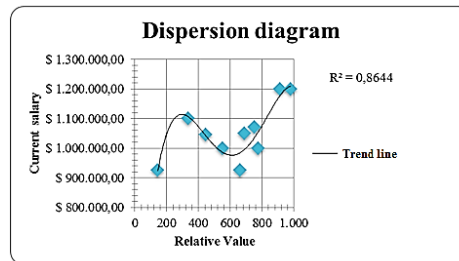


Figure 2. Current salary VS Relative value

In response to the requirement of having an R^2 greater than 0.80, different trend lines were evaluated, including linear, exponential, logarithmic and potential (table 13). The Parsimony principle was taken into account for the choice, being polynomial order 4 the one that obtained the highest coefficient of determination with a value of 0.8644 (figure 2). It is relevant to mention that polynomials with order higher than 4 were not considered because they tend to yield

negative results due to the increase in the standard error of estimation, which means that the larger the S_{yx} , the farther away the observed values are from the regression line (McHugh 2008). Below is the equation that follows the behavior of the curve:

$$y = -1E-05x^4 + 0,0316x^3 - 26,899x^2 + 8922x + 107195$$

Table 13. R^2 and S_{yx} according to order of polynomial function

Order	R^2	S_{yx} (COP)
4	86,44%	\$ 47.720,9
5	86,90%	\$ 52.459,1
6	87,04%	\$ 60.260,4

Based on the given function, the predicted salary is determined by taking as variable X the relative values of the positions in order to establish, taking into account a constant of 20%, the salary range for each job position, i.e., between what amounts their remuneration can move.

The panel of experts assigned the proposed salary taking into account the range obtained in the comparison with companies in the sector for similar positions (table 14).

Table 14. Predicted salary according to limits and relative value

Job position	VR	Salary (COP)	Forecasted salary (COP)	Lower limit (COP)	Upper limit (COP)	Category number (COP)	Proposed salary (COP)	Salary leveling (COP)	Percentage increase	Increase by category (COP)
C2	144	\$ 925.148	\$ 924.243	\$ 739.394	\$ 1.109.091	1	\$925.148	\$ 0	0,00%	\$ 304.000
C8	337	\$ 1.100.000	\$ 1.139.456	\$ 911.565	\$ 1.367.348		\$1.100.000	\$ 0	0,00%	
C9	445	\$ 1.046.000	\$ 1.143.299	\$ 914.639	\$ 1.371.959		\$1.150.000	\$ 104.000	9,94%	
C6	553	\$ 1.000.000	\$ 1.223.864	\$ 979.092	\$ 1.468.637		\$1.200.000	\$ 200.000	20,00%	
C4	661	\$ 925.148	\$ 1.469.130	\$ 1.175.304	\$ 1.762.957	2	\$1.250.000	\$ 324.852	35,11%	\$ 1.584.852
C1	689	\$ 1.050.000	\$ 1.567.148	\$ 1.253.718	\$ 1.880.578		\$1.280.000	\$ 230.000	21,90%	
C7	753	\$ 1.070.000	\$ 1.850.360	\$ 1.480.288	\$ 2.220.432		\$1.500.000	\$ 430.000	40,19%	
C5	775	\$ 1.000.000	\$ 1.967.335	\$ 1.573.868	\$ 2.360.803	3	\$1.600.000	\$ 600.000	60,00%	\$ 2.780.281
C10	914	\$ 1.200.000	\$ 2.939.963	\$ 2.351.970	\$ 3.527.955		\$2.360.000	\$ 1.160.000	96,67%	
C3	979	\$ 1.200.000	\$ 3.525.351	\$ 2.820.281	\$ 4.230.421		\$2.820.281	\$ 1.620.281	135,02%	

The categories are defined by the appreciable increases or decreases in figure 3. It is important to mention that the difference between categories or overlapping cannot be greater than 50%, since if this happens, it means that the salaries for those jobs correspond to the next category (Otero 2014).

Table 15. Determination of categories

Category	Lower Limit Salary	Upper Limit Salary	Difference between categories
1	\$ 739.394	\$ 1.468.637	-
2	\$ 1.175.304	\$ 2.360.803	40,22%
3	\$ 2.351.970	\$ 4.230.421	0,75%

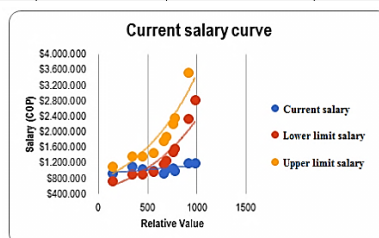


Figure 3. Salary limits and current salary

Three categories were identified. However, in the second and third categories, which group 4 and 2 jobs respectively, there are points outside the lower limit, which implies that these positions require a salary adjustment.

An economic remuneration is proposed based on the predicted salary, the calculated salary range and the limits in terms of remuneration in the sector. A new salary curve is made with the proposed salaries

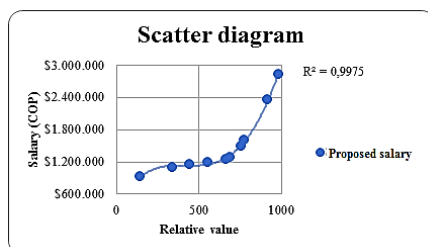


Figure 4. Proposed salary and Relative value

$$y = -2E-06x^4 + 0,0136x^3 - 15,084x^2 + 5970,2x + 333776$$

The R^2 for the adjusted salary is higher than for the current salary, indicating that the equation in figure 4 can more accurately predict the salary.

5.3 Proposed Improvements

It is appropriate to make the salary adjustment to the 8 positions that require it because this will allow to promote equitable remuneration conditions (table 16). Although, for Productos Caribe S.A.S. it may result in an increase in the value of its payroll, in the long term it will show an appreciable improvement in the motivation of employees.

Table 16. Current salary vs proposed salary

Job position	Current salary (COP)	Proposed salary (COP)	% Increase
Treasurer	\$ 1.050.000	\$ 1.280.000	21,90%
Cleaning and cafeteria assistant	\$ 925.148	\$ 925.148	0,00%
Production Manager	\$ 1.200.000	\$ 2.820.281	135,02%
Production assistant	\$ 925.148	\$ 1.250.000	35,11%
Quality control manager	\$ 1.000.000	\$ 1.600.000	60,00%
Tenders and contracts	\$ 1.000.000	\$ 1.200.000	20,00%
Purchasing manager	\$ 1.070.000	\$ 1.500.000	40,19%
Administrative secretary	\$ 1.100.000	\$ 1.100.000	0,00%
Warehouseman	\$ 1.046.000	\$ 1.150.000	9,94%
Human resources manager	\$ 1.200.000	\$ 2.360.000	96,67%
Total	\$ 10.516.296	\$ 15.185.429	44,40%

6. Conclusion

The purpose of the study was to propose a compensation for the positions that make up Productos Caribe S.A.S. in order to mitigate the demotivation of its employees. It was necessary to implement the compensation system of points assignment with the purpose of knowing the relevance of the job positions and their relationship with the salary earned in the absence of any previous one. Among the analyzed, it is observed that the description and specification for the production manager, quality control manager and human resources administrator is not proportional to what they actually receive, so their relative values are considerable but are not reflected in a fair and equitable remuneration.

With the relative value of each job position, the salary curve was designed to delimit the function that best reflects the behavior of the data obtained by means of a trend line. Those with a score above 770 require an increase of 50% or more. The areas requiring the greatest salary leveling with an increase of at least 35% are production and quality control.

With respect to the comparison with the sector to establish how competitive the organization is in terms of salaries, it was found that of the 10 jobs valued, only 5 are in the salary ranges, implying that if Productos Caribe S.A.S. does not consider the situation, it will be difficult to attract and retain qualified personnel and maintain an organizational climate that encourages its workers to perform their duties with the best possible attitude.

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