

Evaluation of Labor Satisfaction

Evaluación de la satisfacción laboral

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ABSTRACT

Objective: A technology using a mathematical model, supported by the rationale of psychological theories centered on the satisfaction of needs and expectations, according to the requirements established by ISO 9001: 2015.

Methods: Scientific observation and sequential experimentation (before-after) evaluation of work satisfaction, and measures for continuous improvement.

Results: The creation of a technology with a model and algorithm through which work satisfaction can be measured, and continuous improvement can be performed.

Conclusions: The rationale for evaluation of work satisfaction is explained through psychological theories linked to need and expectation satisfaction.

Key words: work satisfaction; evaluation of internal customer satisfaction.

RESUMEN

Objetivo: Una tecnología con un modelo matemático, sustentado en presupuestos de teorías psicológicas centradas en la satisfacción de necesidades y de expectativas, acorde a exigencias de la ISO 9001: 2015.

Métodos: La observación científica y la experimentación secuencial antes-después de la evaluación de la satisfacción laboral, y medidas para su mejora continua.

Resultado: Se obtuvo una tecnología con su modelo y algoritmo, mediante la cual es posible evaluar la satisfacción e ir a su mejora continua.

Conclusiones: Se argumenta el sustento de la evaluación de la satisfacción laboral en teorías psicológicas vinculadas a la satisfacción de las necesidades y las expectativas.

Palabras clave: satisfacción laboral; evaluación de la satisfacción laboral; evaluación de la satisfacción de clientes internos.

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INTRODUCTION

A study of work satisfaction _also named mood, work morale, work motivation, and others_ gained momentum during the second half of the twentieth century. It was based on various psychological conceptions that embraced theories like X, Y, Z, in relation to human relations, needs, equity, expectations, goals, etc., whose main advocates were Elton Mayo, Abraham Maslow, David McClelland, Frederick Herzberg, Donald McGregor, Edward Lawler, Víctor Vroom, Marshall Sarkin, Edwin Locke, and Frederick Taylor, as a precursor, among others (Chiavenato, 2011; Konopaske, Ivancevich & Matteson, 2018; Milkovich, Newman, & Gerhart, 2014;).

In the twentieth century, in light of the implementation of new ISO standards (International Standardization Organization), the need to evaluate work satisfaction, identified as satisfaction of the internal client, gained momentum, according to Llanes, Moreno, and

Lorenzo (2018); and ISO 9000: 2015 (International Standardization Organization) (2015a) and ISO 9001: 2015 (International Standardization Organization. (2015b), particularly because ISO 9001 2015, offers considerations for evaluation feasibility. It emphasizes on considering the organization and its context (internal and external matters), and uncertainties, through risk and opportunity management, and by means of performance evaluation, where a summary indicator is signified by satisfaction.

Since the onset of work satisfaction studies to date, the literature related to management, and particularly, human resources management (HRM), have granted work satisfaction mostly as an indicator of results, not an indicator of management (Chiavenato, 2011; Dessler, 2015).

According to the literature, another construct linked to work satisfaction is commitment (Báez, Zayas, Velásquez & León, 2019; Bakker & Schaufeli, 2008; Barbosa & Da Costa, 2017; Blázquez, Zaldivar & Fleite, 2018; Costa, Demo & Paschoal, 2019; Hernández, Miranda, Junco & Saltos, 2017), which is required by ISO 9001: 2015 for implementation, particularly by the highest executives of a company. This author has worked on organizational commitment, addressing it as an indicator of management (Cuesta, 2016). As a result of acquired experience, internal customer satisfaction should not only be regarded as an indicator of result, but also as an indicator of management, as a process within an organizational context, which is critical in the consideration of need satisfaction and expectations in keeping with ISO 9001: 2015.

This is a current need that demands the utilization of technology to evaluate internal customer satisfaction based on ISO 9001 requirements: 2015, assumed by Cuban companies. Several experiences linking this author's research on Cuban companies refer to an evaluating procedure, as a background of work satisfaction evaluation (Cuesta, 2017), which is updated and renewed in this paper. In the author's previous experience, the motivational theory of Frederick Herzberg was assumed. It focused on the satisfaction of needs, where grounds or mainly extrinsic material factors linked to materialization or

achievement _regarded as really motivating_ were interrelated intrinsic factors linked to materialization, achievement, recognition, and promotion, basically (expressing the reality of Cuban companies). However, he disagreed with the methodology of studies conducted by Herzberg, in which perceptions were not correlated to evidence, particularly empirical. Neither did he make a casuistical selection of factors, which was later fixed through the conception and implementation of a procedure then.

Now, the technology to embrace, overcoming methodological discrepancies with the theory of Herzberg, must be considered in its dynamism with the theory of expectations, basically identified with the theories of Edward E. Lawler and Víctor Vroom (Chiavenato, 2011; Konopaske *et al.*, 2018; Martocchio, 2015; Milkovich *et al.*, 2014). It considers a ISO 9000 requisite that comprises the needs and expectations, and defines customer satisfaction as the perception of the level in which requisites have been met. Hence, ISO 9001: 2015 (p.17) says clearly that “The organization must conduct customer perception follow-up of the level in which customer needs and expectations are met”.

The issue to be addressed was the absence of a technology to evaluate work satisfaction or internal customer satisfaction, which means the perception of the level in which requisites have been met, according to its needs and expectations, on a casuistical manner, and considering the evidence. The general aim was the conception of an updated technology that comprises a mathematical model that lies on the general assumptions of psychological theories based on need and expectation satisfaction. It enables evaluation of work satisfaction or internal customer satisfaction conceived, and the perception of the level in which customer requisites have been met, in keeping with ISO 9001: 2015, casuistical, and based on evidence. The main result of this study was a new technology with a model and algorithm.

DEVELOPMENT

Methods used

The material used as the object of this study was Cuban work organizations (companies). The main methods have been the review of related scientific literature, scientific observation, before-after sequential experimentation, and mathematical modeling (formulation or expression of measure calculation).

A technology or methodology was set to evaluate internal customer satisfaction, considering needs and expectations, as well as risks and opportunities, which was conceived for the times running. The method of expert opinion was the first one to be used, in keeping with the casuistical logic, and to seek for empirical evidence. The author's previous research on work satisfaction was used as reference.

Technology will be understood as a volume of scientifically based knowledge that permits description, explanation, design, and implementation of technical solutions to practical problems, systematically and rationally.

The method of expert opinion was applied through the Kendall W statgraph, to a list of factors or general grounds, then the most influential case-by-case factors on work satisfaction with statistical significance, were determined. Accordingly, a first list to check specific grounds stemming from general grounds was drafted. Satisfaction measurement was expressed through coefficient $C_s = \frac{\sum a(2) + \sum b(1) + \sum c(0)}{N}$. Alternatively, a no-significance choice would require the concordance coefficient (Cc).

Following each C_s from the surveyed subjects, empirical indicators linked to performance or work discipline, such as productivity (pt), and idleness (p) were paired. Each indicator was given certain ranges for classification of surveyed subjects in two groups: one leaning to dissatisfaction (I), and the other leaning to satisfaction (S), with a pivotal C_s indicator. The ranges were arranged on a casuistical manner for every empirical indicator and the C_s .

Later, a second checklist is included, containing more items, and comprising possible grounds or measures to be assessed by the members of every group I and S. Then, model VIS is used to obtain VI and VS, explained at the end, as the closing argument of the theoretical and methodological backgrounds presented. This contrasting is necessary, according to the theory of Herzberg, as he revealed that worker perceptions are different, in terms of satisfaction leaning (S), to the ones leaning to dissatisfaction (I).

The previous experience (Cuesta, 2017), identified the list with measures for work and salary organization (including work safety and hygiene). Now, there are proposals to integrate evidence in a wider extent than the organization and its context, considering internal and external matters, as demanded by NC 9001:2015, including risks and opportunities. The pool of workers are subjected to this list, by processing with the VIS model, and its algorithm.

Besides, sequential experimentation is also implemented before-after the measures and grounds assessed.

Results achieved

Since the beginning of scientific management _training conducted by Taylor to immigrant worker Schmidt, to make him respond to the former's initiatives and expectations related to the assumption of a new work method_ evaluation of work satisfaction was included in business management. In his conversation with Schmidt, Taylor said, "...what I want to find out is if you want to make \$1.85 a day or if you are satisfied with \$1.15, which is what all the cheap workers are making" (Taylor, 1911, p.44).

The so called theory of motivation maintenance developed by Frederick Herzberg (Chiavenato, 2011; Herzberg, Mausner & Snyderman, 1959; Konopaske *et. al*, 2018), contrasts factors or grounds in satisfaction and dissatisfaction providers. The former require a guaranteed job permanently, since they lead to high performance, linked to needs of realization, acknowledgment, and promotion, basically, associated to work *per*

se. The possible dissatisfaction providers fail to offer such high performance, as they are demotivating, but cannot feel assured because the former will not be shown.

In a research study, 200 engineers and accountants from the industry, in Pittsburgh were asked to offer information about the work events that could have meant a remarkable improvement in work satisfaction, or that had notably contributed to dissatisfaction. It concluded that the main factors that determine work satisfaction, and motivation, are achievement or realization, acknowledgement, work itself, responsibility, and promotion. If an environment where these factors can operate, is reached, people will respond positively; these factors were considered as motivating. Maintenance of these factors includes the policy of the company, supervision, salaries, interpersonal relations, and work conditions, though they are not motivating themselves, but maintainers. If they fail to operate well, they become dissatisfaction providers, leaving motivating factors ineffective. Herzberg insisted on clarifying the acknowledging factor, which is about recognizing achievement, more than acknowledging human relations. This kind of recognition, he noted, is useless as a satisfaction provider.

Apart from these results is the undisclosed fact that satisfaction grounds are different from dissatisfaction grounds, and therefore, workers who lean to satisfaction (S) differ in the perception of grounds from workers leaning to dissatisfaction (I). It means that the modification of dissatisfaction grounds does not lead to an increase in dissatisfaction in those who lean to it, since they are not manifested in a bipolar linear dimension.

Note the interesting side, where the initial studies of Herzberg included highly skilled workers. A research study of industrial psychologists in the United States of America provides more ground to that fact. Edwin E. Ghiselli and Clarence W. Brown coincide with the reality of Cuban workers (referred to in Cuesta, 2017). Labor in factory A demanded less skills; factory B needed higher skills; factory C, even more than B; and factory D demanded the highest. The surveys conducted to workers in the factories revealed that in factory A, the greatest source of satisfaction was the salaries they made, and that the

work conditions and labor itself, had little contribution to that satisfaction. In factory B, the work conditions supplemented by salaries were the main source of satisfaction. The task itself, and the work conditions were the major sources of satisfaction, just like in factory C. In factory D, the task itself was the major source of satisfaction.

Herzberg's theory continued to be corroborated in other research, including a study done at Texas Instruments, which was summarized in three questions: What motivates employees to work efficiently, a permanent challenge in the activity that allows a feeling of realization or achievement, responsibility, promotion or the joy of working by itself? What produces dissatisfaction in workers, factors peripheral to key tasks (lighting, coffee shops, age-related rights, salaries, or other similar reasons? When do workers become dissatisfied, in face of motivating opportunity elimination, and they become sensitive to the environment, and start looking for flaws? Moreover, it has been verified that the explicative power of this theory, also known as the two-factor theory in different countries and cultures (Konopaske *et. al*, 2018).

The theory of expectation, whose most relevant actors have been Víctor Vroom and Edward E. Lawler since the beginning, has had continuators to date, particularly to evaluate satisfaction based on payment or salaries that lead to comparisons, and the ensued expectations associated to perception of equity and justice (Milkovich *et al.*, 2014; Martocchio, 2015). In essence, according to this theory, a worker's motivation to have an effective performance is determined by two variables. The first one is included in the concept of effort-reward likelihood. It is the subjective probability of individuals who think that to devote certain amount of effort toward effective execution of an action will lead to certain reward or positively evaluated result. This effort-reward probability is determined by two secondary subjective probabilities: one saying that effort will bring efficiency, and the other, that efficiency will lead to reward. Vroom refers to the former as expectation, and the latter, as quality of the environment.

The second major variable is the concept of value or worth of reward. It refers to the individual perception of value or cost of reward or result, which might be achieved through effective performance.

In the professional practice of this author, expectation (understood as the hope of realizing or achieving something as a perception of perspective or hope), has been considered of high practical importance, both human (motivating) and economic. In that sense, the author of this paper assumes the following appreciation of English writer George Bernard Shaw: "People don't act by their own experience, but guided by their own hopes" (Cuesta, 2017, p. 43).

The interpretation of the theory of expectations can be summarized in the model of Edward (Chiavenato, 2011), which says that a person's motivation will depend on, 1, expectations from the relation between effort and proper performance; 2, expectations from the relation between proper performance and compensation; 3, perception of the attractive things from compensation (Fig. 1).

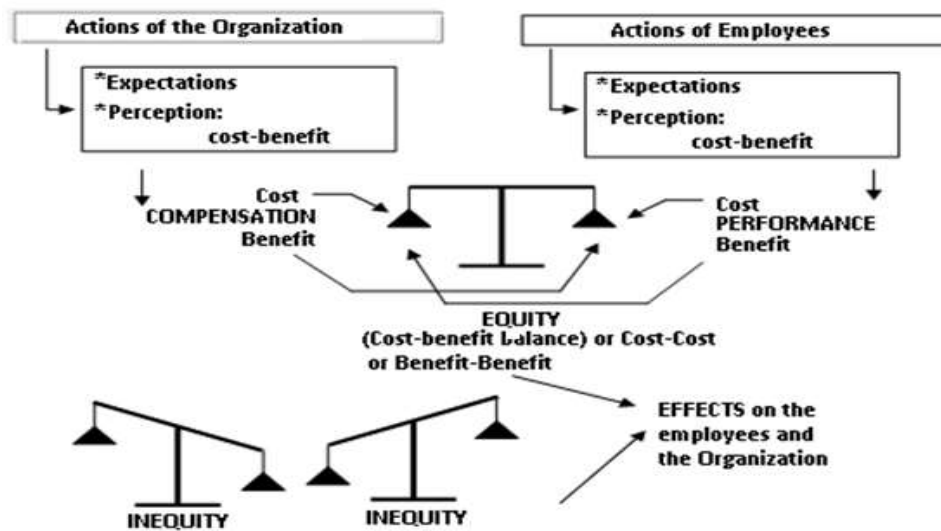


Fig.1. Conceptual relations of work compensation associated to performance

Source: (Cuesta, 2017)

During this author's professional consulting and teaching practices, work compensation was defined as a key process of HRM, considering both need-based theory and expectations. The latter involves the psychological complexity of its fabric of performances (actions), perceptions, expectations, and assessment. Ultimately, it responds to the satisfaction of some needs. The definition is as follows (Cuesta, 2017):

A work compensation system or work incentive system is comprised by *actions* intended for employees to achieve the *goals* of the organization, and meet their personal *needs*, whose *effects* represent benefits both for employees and the organization. Accordingly, the two parties meet their *expectations* and *perceive equity* through the cost benefit balance caused by performance (p. 363)

Fig. 1 graphs the relations of terms used in this definition. It shows that for the organization, compensation is a cost (value), as employee performance is a cost for them. When the cost-cost relation is balanced, there is equity in the exchange. In other words, in the benefit-benefit balance, performance means a benefit for the organization, which is offered by the employee, and the compensation taken from added value means a benefit for the employee, which is offered by the organization.

Besides, as an indicator of management, and a process, this author has dealt with satisfaction. Its treatment comprises the Deming or PHVA cycle (ISO 9001: 2015), when considering performance and commitment evaluation (Cuesta, 2016). The importance of this lies in the fact that satisfaction is not a moment or static result, it is dynamic. It is reflected in management, which is used by this evaluation technology.

Work satisfaction should be evaluated according to a division of employees in two groups, one leaning to satisfaction (S), and the other leaning to dissatisfaction (I), considering factual differentiation given by Herzberg, and the empirical evidence on a casuistical basis. The methodological difference of this procedure lies in these two aspects.

Some authors state that work satisfaction depends on a set of perceived general grounds or factors, which limit the psyche-activity link to the former element. Hence,

$$Cs = f (FA, FB, FC... FN)$$

Where,

Cs: coefficient of work satisfaction

F: factor of possible ground for satisfaction (FA: Salary, FB: Management, FC: work organization, etc.).

Consequently, they evaluate the level of satisfaction through surveys with the previously set factors, by means of questions to workers about how they perceive them, which is the way Herzberg proceeded.

However, the procedure suggested by this author is different; it assumes that the psychosociological side is revealed through practice, which involves linking this perception (psychic reflection) to people's working activities. The previous equation must be completed through this interaction:

$$Cs = f (FA, FB, FC ... FN)$$

$$\updownarrow \quad \Rightarrow \quad \Delta Pt$$

$$Cs = f (I_1, I_2, I_3 ... I_3)$$

Consequently, based on the previously cited methodological principle, in search of empirical evidence, the internal conditions (subjected) must be correlated to the external conditions (objective), which might indicate cases of work indiscipline (Ii). The above-mentioned indiscipline shows that correlation.

As a trend, an increase in work satisfaction (Cs) will correspond to a decline in foul performance or work indiscipline (Ii) with their involvement in work productivity (ΔPt). It has been verified in previous research studies done by this author, through surveys based on casuistical factors, not previously arranged (Cuesta, 2017). This relation is shown in Fig. 2.

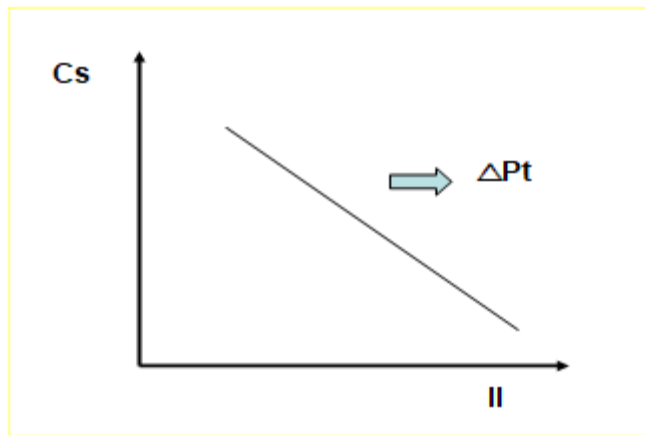


Fig. 2 Satisfaction-work indiscipline relation

Source: (Cuesta, 2017)

Accordingly, the following hypotheses should be verified (H_1):

$$H_1: \Delta Pt = f(Cs / I_1)$$

$$H_1: \Delta Pt = f(Cs / I_2)$$

$$H_1: \Delta Pt = f(Cs / I_3)$$

(...)

$$H_1: \Delta Pt = f(Cs / I_n)$$

Studies based on factors or preset grounds, according to the general experience to find Cs, indicated that this negative statistical correlation was not expressed. Then it was found that such grounds were not casuistical. In fact, some of the most influential grounds for worker dissatisfaction in a workshop could be the hygienic and sanitary conditions, organization of production flows, and management, whereas for others, it could be salaries and the prospects of promotion. Experience has demonstrated that the method of expert opinion was necessary to decide on the most influential factors or grounds in terms of satisfaction.

Moreover, other studies conducted by this author noted that the strongest negative or reverse correlation, according to the Spearman r_s became evident with index idleness during the working hours (I_3 o p). Table 1 shows verification of correlation $C_s - I_3$ in the production staff of different Cuban companies.

Table 1 Verification of $C_s - I_3$ correlation

Company	Rs correlation (Variables and p)	Cs Significance (α)	Level of	Number of workers	Idleness in work hours	
					(S)	(I)
E ₁	0.78*	0.001		32	25.8%	51.5%
E ₂	-0.729	0.001		32	17.4	42.5
E ₃	-0.92	0.001		35	15.3	35.3
E ₄	-0.97	0.001		57	44.9	(S + I)
E ₅	-0.633	0.001		26	7.6	18.5
E ₆	-	-		36	8.3	20.7

Where,

(*): The positive relation exists thanks to proper use of working hours (q).

(S, I): Different groups leaning to satisfaction (s) and dissatisfaction (I). The values were obtained through the instant observation technique or work sampling (referred to in Cuesta, 2017), with $\alpha = 95\%$ and $s = \pm 0.1$ just considering IWTBD (interrupted working time due to broken discipline).

(E₁): Mario Reguera Facility No. 08, Jose Maceo Printing Company.

(E₂): *Claudio Arguelles* Giron Bus Company, Ministry of Steel and Mechanical Work (SIME).

(E₃ and E₄): Jose Marti and La Demajagua sugar producing companies (sugar mills), Ministry of the Sugar Industry (MINAZ).

(E₅ and E₆): *Dr. Mario Muñoz* and *Saúl Delgado* Pharmaceutical Laboratories, Ministry of Public Health (MINSAP).

(-): The p indexes per worker were unfinished.

Source: Taken from Cuesta, 2017.

An idea of the significance of the Cs - I₃ relation as a reserve of productivity. Assuming that the average salary of each of these workers is \$ 152 monthly¹, which accounts for 85% labor use, based on the characteristics of the type of production, and because company groups have half S workers and half I workers, then the salary reserve (salary paid for idle time or presence-absence) in E₁ would be,

Group I

\$152/month-worker * 12 months/year * 16 workers = \$ 29 184, as the salary fund earmarked.

\$29 184 ----- 85%

X ----- 33 % (85% - 51.5 %, the I₃ achieved)

X= \$11 330 that should have been paid actually.

\$29 184-\$11 330 =\$17 854 a year, which is unduly paid (idle working time) to these 16 workers.

Group S:

\$29 184 ----- 85%

X ----- 59.2 % (85 % - 25.8 %)

X= \$20 325 that should have been paid actually.

\$29 184-\$11 330 =\$17 854 a year, which is unduly paid (idle working time too) to the remaining 16 workers.

The above-mentioned relations show that:

1. There is a remarkable difference between the economic efficiency of a group of workers leaning to dissatisfaction, compared to another group leaning to satisfaction.
2. The case observed (dissatisfied group) shows that idleness during the working hours, compared to the satisfied group, was twice as much, with a duplicated negative economic repercussion.
3. In this case, after obtaining Cs by means of expert opinion, the negative correlation between a decline in work satisfaction and a rise in inappropriate use of the working hours is high, with an ensued drop in work productivity.

More recent studies in which the author of this paper took part, corroborated the positive relation between work satisfaction and proper performance, and a similar inverse or negative relation between Cs and idleness during the working hours or improper performance, based on a set of tangible and intangible indications associated to performance and work competences, as a capacity demonstrated for successful performance (Vargas & Cuesta, 2018; Ronda, Leyva & Cuesta, 2017; Hernández *et al.* 2017).

Discussion

Llanes *et al.*, who have an outstanding experience as consultants in quality management of Cuban companies, made a significant remark during the analysis of implementation of ISO 9001: 2015. After insisting on the importance of improving the internal customer, considering the organization and its context in its two main internal and external issues: the environment and health, along with working conditions, they say, "... it must be translated into more protection of the environment, security in health care and working

conditions of the employees, as the most valuable asset within an organization” (Llanes *et. al*, 2018, p. 34).

From the above statement, susceptible to improvements, and this ISO 9001:2015, which is the evaluation of employee satisfaction.

A fundamental requirement of ISO 9001: 2015 is the commitment of implementation by the top executives of the organization, which must be assumed along with a stronger organizational commitment by the employees, which always involves certain level of need and expectation satisfaction, in order to achieve continuous improvement, as corroborated by outstanding consultants in Cuban companies (Báez *et al.*, 2019). In accordance with improvements and this ISO 9001: 2015, is the commitment by the top executives to make efforts to strengthen the commitment of the other workers.

To this author, work satisfaction or internal customer satisfaction is the perception of the level in which certain needs and expectations have been met, as part of the internal customer’s demands, taking into account the organization and its context, as well as its risks and opportunities.

The above author’s definition of work compensation, which considers both needs and expectations, is important during work satisfaction evaluation, since the said actions targeted to employees are incentives (grounds or measures) to be assessed or evaluated in order to achieve work satisfaction.

Under the name model VIS, and its technology, the procedure to evaluate work satisfaction conceived today can be understood. It will be initiated by the method of expert opinion, in keeping with the casuistical side, and search for empirical evidence.

The application of the method of expert opinion with Kendall W to a list of general factors or grounds, helped determine the most influential casuistical factors on work dissatisfaction. From it, a first list of specific grounds was determined. Five factors remained out of the first 10, in keeping with the selection criterion used (Cuesta, 2017).

Of the 5 general grounds, 25 items or questions were established (five in each factor not to bias response probability), weighting the response choices in 2, 1, and 0, respectively. Satisfaction was measured by coefficient $C_s = \frac{\sum a(2) + \sum b(1) + \sum c(0)}{N}$, whose application, for instance, to 30 surveyed subjects who check the A choice 900 times, 240 the B choice, and 30 the C choice; substituting $C_s = \frac{450(2) + 240(1) + 30(0)}{30}$, will result in $C_s = 38$, being $N = 30$. The 25-item or question survey, and the maximum value of $C_s = 50$, ranging between 0 and 50 points (Table 2).

Table 2 Expert weighting in the selection of the most influential factors on work satisfaction

Experts	E ₁	E ₂	E ₃	E ₄	E ₅	E ₆	E ₇	E ₈	E ₉	R _j	C _c
Factors											
1. Lack of motivation to work due to poor salary incentivization	3	3	2	3	1	3	3	3	2	28	66%
1. Lack of work organization due to burden and capacity unbalances	1	2	1	1	3	1	1	1	1	12	78%
2. Deficient cleaning in productive areas	7	5	9	6	7	8	7	7	7	63	56%
N = 12											

Source: Self-made

As a choice, when no statistical significance has been foreseen, the method of expert opinion has been used along with the concordance coefficient (C_c). It is the most frequently used method by the author of this paper in factor selection (Cuesta, 2016, 2017). It consists in listing factors, then cutting down the redundant ones. They are subjected to expert weighting (1, the most important; 2 the next important; to the least important, *n* factor), expressed through R_j. Then the factor C_cs are determined (Table 2), discriminating (accepting) the ones where $C_c \geq 60\%$. C_c varies between 0 and 100%. 0

means no consensus or agreement, and 100% means total consensus or agreement. Cc is calculated according to the following expression:

$$Cc = [(1 - Vn / Vt) * 100]$$

Where,

Cc: agreement in percentage

Vn: number of experts against the predominant opinion

Vt: total number of experts

Following each Cs from the surveyed subjects, empirical indicators linked to performance or work discipline, such as productivity (pt), and idleness (p) were paired. Each indicator was given certain ranges for classification of surveyed subjects in two groups: one leaning to dissatisfaction (I), and the other leaning to satisfaction (S), with a pivotal Cs indicator. Thus, following the previous example, if the surveyed individual scores between 0 and 25, it means I; if it is between 26 and 50, it means S. Later, the second check list is used, which will be longer, and comprising possible grounds or measures to be assessed by the members of each group (VI, and VS). In the experience achieved and reflected in Cuesta (2017), the list with measures dealing with work organization and salaries was identified. Further inclusions like evidence of its organization and context are being suggested, considering the internal and external matters, as shown by NC 9001: 2015, and they should also include risks and opportunities. Every worker is asked all these questions, whose answers are processed through the corresponding VIS model.

These possible grounds or equally possible measures, refer to every elements or processes that make up organization and its context (NC 9001: 2015), in its internal and external matters; several different key HRM processes stand out in the first one, as well as risks and opportunities. A second checklist will comprise current grounds or measures, which will be presented to the individuals in the study.

In relation to ground assessment, each ground to be assessed (taking into account the real possibility of transformation through a corresponding measure), is presented as an

existing current situation. For instance, the noise level, lighting in the warehouse, wage system, have the real possibility of changing those grounds with measures like elimination of the reverberation phenomenon through panels, replacement of bulbs for fluorescent lamps, and transformation of the remuneration system into paying per item, respectively. The purpose of assessing possible real measures seeks an order of priority of the measures to be implemented. The highest priority is given to the ones giving more satisfaction to workers (from plus positive to plus negative values). Their implementation must lead to increases in productivity by means of reduction of idleness due to flaws in the working discipline. The main rationale of these ISO standards should not be disregarded due to the management of change, in order to ensure continuous improvement.

In that direction, the VIS model conceived below, integrates assessment of different grounds or measures for modification. Considering ISO 9001: 2015, these perceptions are determined, in which the last grounds or measured to be assessed, should include the organization and its context both internally and externally, as well as explicit uncertainties of risks and opportunities, from which, a second checklist is issued. The VIS model that defines evaluation of internal customer satisfaction is the following:

$$V_i = \frac{\sum_{j=1}^n (1) a_j + \sum_{j=1}^n (0) b_j + \sum_{j=1}^n (-1) c_j}{N} = \frac{\sum_{j=1}^n (1) a_j + \sum_{j=1}^n (-1) c_j}{N}$$

Where,

a_j : a worker with a favorable or positive perception of the level in which his needs and expectations (requisites) are met, in relation to the k ground or measure.

b_j : a worker with an indifferent perception of the level in which his needs and expectations (requisites) are met, in relation to the k ground or measure

c_j : a worker with an unfavorable or negative perception of the level in which his needs and expectations (requisites) are met, in relation to the k ground or measure

N : total worker in group I (to get I), or in group S (to get VS, or from both groups (to get VIS), in the *checklist*.

i : S, I.

VI: assessment of workers leaning to work dissatisfaction (group I).

VS: assessment of workers leaning to work satisfaction (group S).

VIS: VS + VI for every possible ground or measure that produce plus positive to plus negative values. These are interpreted according to the direction adopted as the most to the least dissatisfying grounds, or the most satisfying measures, whose implementation should be emphasized. It becomes an indicator of motivational influence that indicates the grounds to be transformed, and the measures to be implemented. Should contrasting fails to take place in groups S and I, VIS replaces V_i in the previous expression, and N is the total surveyed individuals.

Accordingly, the algorithm for determination would be,

1. To determine the k quantity of grounds (or measures) to assess.
2. To indicate N in group I, and N in group S.
3. The a , b , and c from each group are determined (S and I), in relation to the total grounds or measures.
4. To calculate VS and VI for all the grounds or measures in the *checklist*.
5. To obtain VIS (VS + VI) in each ground or measure. Should that contrast fail to take place in groups S and I, VIS) V_i , and N_i is the total surveyed individuals.
6. To rank VIS in a descending order of work satisfaction influence, starting with the lowest algebraic value. This ranking can also be used for VS and VI.

It will be illustrated with a sample from the checklist where 32 grounds were presented. This sample indicates the six most relevant grounds, in order of priority, in relation to their influence on work satisfaction, as shown in Table 3. While setting the ranking, in this

assessment VIS was observed to vary between -1.64 and 1.52, the latter corresponding to the ground ranked No. 32, the least influential on work satisfaction (Table 3).

Table 3 Ground assessment segments, through VIS

Grounds	Evaluations
15. Deficient organization of labor due to the absence of a balance between the burden and the capacity of working processes.	(VIS= -1.64)
9. Deficient lighting levels in working areas	(VIS= -1.49)
16. Absence of working standards to implement remuneration on results.	(VIS= -1.11)
7. Loss of motivation for work due to poor salary incentives	(VIS= -1.01)
3. Difficulty with group heads resulting from the lack of leadership	(VIS= -0.87)
10. Instability in the flow of supplies due to shortages of external suppliers	(VIS= -0.76)
N= 32	(VIS= 1.52)

Table 4 shows the way of processing, based on the previous partial sampling of the results of VIS model, corresponding to worker responses in a company, in an S group with N = 17, and a I with N = 11.

Table 4 Processing of the results according to the VIS model Source: Self-made

Ground	Workers		(VS + VI) VIS
	S	I	
15	a= 0 b= 0 c= 17 (VIS= -1.00)	a= 0 b= 7 c= 7 VI= -0,64	-1.64
9	a= 0 b= 4 c=13 (VIS= -0.76)	a= 0 b= 3 c= 8 (VIS= -0.73)	-1.49
16	a= 0 b= 9 c= 8 (VIS= -0.47)	a= 0 b= 4 c= 7 (VIS= -0.64)	-1.11
7	a= 1 b= 4 c=12 (VIS= -0.65)	a= 0 b= 6 c= 4 (VIS= -0.36)	-1.01
N= 32			

If the grounds assessed become measures that produce a transformation, then continuous improvement will be in place, following a reasonable time interval to observe the impact or effect of measures, with an ensued contrasting of the assessment of implementation of the VI model before and after the measures involved in continuous improvement. Accordingly, internal customer satisfaction will be effective, as a before and after process, which is involved in its management.

A remark pursuing continuous improvement. Although Table 3 shows an arrangement based on VIS, according to Herzberg, the proper thing would be to deal with the measures by groups (VI and VS), considering that the response is not linear, but in accordance with the work satisfaction trend in each group.

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CONCLUSIONS

The rationale of work satisfaction stated in psychological theories linked to the satisfaction of needs and expectations shown in the definition of work compensation assumed by the author, is thoroughly explained. They are associated to the effects of evaluating internal customer satisfaction, using the term requisite, assuming the perception of the level in which needs and expectations are met, as stipulated by ISO 9001: 2015, which is treated as a process, an indicator of management.

Considering ISO 9001: 2015, the assessment of different grounds or measures involves the organization and its context, in terms of its internal and external conditions, as well as explicit uncertainties in risks and opportunities, creating through technology, a second checklist that will be used to evaluate internal customer satisfaction in all workers.

Conflicts of interest and conflict of ethics statement

I herein declare that the scientific article entitled Evaluation of Work Satisfaction, submitted to journal Challenges of Management (Retos de Dirección) does not contain ethical conflicts.

NOTES

¹Salary data was collected from the time of the first experience, but the procedure to reveal productivity reserves and differences, is still in effect.