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## SATISFACTION OF AN EMPLOYEE IN A SPORTS ENTITY: DESIGN AND VALIDATION OF A MEASUREMENT SCALE

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### ABSTRACT

*This research aims to generate validation and reliability of an instrument to measure employee satisfaction in a sports entity, comprising 28 items in six factors, using a Lickert type measure. The sample comprises n = 187 employees of the State Sports Commission of Sonora, Mexico, with 75.4% men and 24.6% women, between the ages of 18 to 56 years, grouping the different ages of workers in five groups (18 to 25 years, 26 to 35 years, 36 to 45 years, 46 to 55 years and > 56 years). Carrying out the exploratory factor analysis (AFE) and confirmatory factor analysis (AFC). Satisfactory values were obtained, resulting in Kaiser-Meyer-Olkin values of .91, and the Bartlett test was statistically significant with a value ( $\chi^2 = 3296.01$ ,  $gl = 378$ ;  $p < .001$ ), six factors were extracted with eigen values greater than 1 and that together explain 69.08% of the total variance. the indices of the model in the confirmatory factor analysis were satisfactory:  $\chi^2 / df = 1.29$ , NNFI = .99, CFI = .99, and RMSEA = .03. The results of internal consistency using Cronbach's alpha index with values in this case greater than .70, composite reliability (CR) with values between .88 and .94, and the average variance index extracted (AVE), meanwhile, also showed adequate values, in a range between .60 and .83. It is considered that the survey of employee satisfaction was statistically validated, obtaining psychometric guarantees and thereby providing a tool for the evaluation of the subject, accrediting it as useful for research, being able to be used by professionals, managers and those responsible within the different organizations.*

**Keywords:** Reliability, instrument, worker, sport organization, job satisfaction.

### 1. INTRODUCTION

Work satisfaction is particularly important in organizations, as it contributes transversally to human resources management and to the well-being of people, through the detection of training needs, the formulation of promotion programs, and the design of human capital management systems (Imran, Saeed, Anis-ul-Haq, & Fatima, 2010). A satisfied, committed employee who feels that his/her contributions are considered and that he/she works as a part of a team will be more productive. Therefore, the total quality models include aspects that directly impact human resources management and, consequently, employee satisfaction and commitment (Mendoza, Orgambidez, & Carrasco, 2010). Others authors (Ibrahim, 2015; Judge, Piccolo, Podsakoff, Shaw, & Rich, 2010) considering like motivational factor and strategies for the job, the financial

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incentives promotion of Coaches, staff training and development, provision of quality equipment and facilities enhance job performance.

Employee satisfaction is directly related to their experiences within the organization and their perception, as they culminate in an emotional component and therefore in the individual's way of acting (Abrajan, Contreras, & Montoya, 2009).

In trying to limit and define the concept, employee satisfaction refers to the affective orientation of people toward the functions they perform in their work. Although it is true that a single and generalist conception of work satisfaction could be adopted, it cannot be denied that this is a global attitude toward work whose causes are multi-dimensional (Bòria-Reverter, Crespi-Vallbona, & Mascarilla-Miró, 2012; González, Sánchez, & López-Guzmán, 2011).

Therefore, the degree of satisfaction can impact the quantity and quality of the work performed by the subjects within their jobs; therefore, job satisfaction is a classic indicator that is valued when the general attitude of employees in organizations is to be researched (Aamodt, 2010; González, Guevara, Morales, Segura, & Luengo, 2013). Therefore, knowing an employee's viewpoint and the degree of job satisfaction is significant (Abrajan *et al.*, 2009), using measuring instruments (Jun & Cai, 2010) and considering personal and work characteristics (Antoncic & Antoncic, 2011; Ayestarán & Valencia, 2010; Belias & Koustelios, 2014; Belias, Koustelios, Sdrollias, & Koutiva, 2013; Cohrs, Abele, & Dette, 2006; Franek & Večeřa, 2008; Gamero, 2003; Gazioglu & Tansel, 2006; Judge *et al.*, 2010; Lane, Esser, Holte, & McCusker, 2010; Pelit, Öztürk, & Arslantürk, 2011).

In this sense, it has been possible to appreciate a remarkable increase in the design of instruments that have been used as tools for the in-depth understanding on the satisfaction and behavior of employees. Authors such as Boluarte (2014) analyze the psychometric properties of the work satisfaction scale, which comprises two sub-dimensions: intrinsic and extrinsic satisfaction. Aguirre, Andrade, and Castro (2005) developed an instrument with variables that impact the employees' job satisfaction, by evaluating the following: labor responsibility, working conditions, capacity, training and achievements, relationships with superiors, vision of the company, relation with the family, physical conditions, and displacement. On the other hand, Anaya and Suárez (2004) performed the work satisfaction scale-version for counselors (ESL-VO) as a resource for the evaluation of work satisfaction.

In the field of sports services, few studies have focused on the design of instruments and on the measurement of employee satisfaction, such as Sánchez-Alcaraz and Parra-Meroño (2013) who designed and validated a work satisfaction questionnaire for sports coaches (CSLTD) to evaluate safety, promotion, remuneration, working conditions, and extrinsic factors. On the other hand, Murillo, Ramírez, Sanchís, and Palacios (2013) studied the satisfaction of teachers who are sports management in schools and designed the perception scale of sports school leaders (EPRED). This scale assessed the general and economic perception, monitoring and control, technical staff, person responsible, program impact on users, program structure, and development and intervention. García (2008) designed and validated an instrument to measure the perception of satisfaction with the work climate in municipal sports organizations by assessing the motivation, training, supervision, work safety, organization's resources, and general conditions of the organization. Another author (Li, 1993) designed an instrument to evaluate the satisfaction of coaches with their work and performance, analyzing influence at work, job responsibility, work motivation, incentive system, spirit of cooperation, communication, interpersonal relationships, hygienic factors, behavior of the leader, capacities and abilities of the leader, evaluation, and morals.

Several authors have studied and analyzed work satisfaction as well as other factors within public and private sporting entities (Dalkilic & Atasoy, 2016; Dixon & Warner, 2010;

Kaltenbaugh, 2009; Medina, Ceballos, Giner, & Marqués, 2009; Stier, Schneider, Kampf, & Gaskins, 2010).

Finally, it is important that the instruments used in the research are valid and reliable (Hernández, Fernández, & Baptista, 2014). Validity refers to the instrument's ability to measure the construct that it seeks to quantify (Lamprea & Gómez-Restrepo, 2007; Morgan, Gliner, & Harmon, 2001) and reliability, i.e., the feature to property display similar results, error-free, in repeated measurements, as well as to the homogeneity feature of the items (Kaplan & Saccuzzo, 2006). Therefore, the validation of an instrument is always an important contribution in different contexts and certainly in sports institutions (Ramos-Carranza, Medina-Rodríguez, Morales-Sánchez, Morquecho, & Ceballos, 2015). Hence, the purpose of this work was purpose to determine the psychometric properties of an instrument to measure the satisfaction of the employee applied to a sports entity.

## 2. METHODS AND MATERIALS

### 2.1 Participants

A descriptive-correlational study with a quantitative approach was carried out transversely by its application in a single temporal moment (Hernández *et al.*, 2014). The study population comprises 364 employees from the State Sports Commission of Sonora (CODESON), Mexico; a representative sample of 187 participated voluntarily with an error of  $\pm 5\%$  and a 95% confidence interval. The sample studied comprises 75.4% men and 24.6% women, with a greater participation of the age group of 26–35 years (29.4%). Regarding the level of studies, 42.2% of the employees have a bachelor's degree according to the work area; the personnel belonging to the high-performance area stands out with 55.6% (Table 1).

**Table 1: Employee's personal information**

Variable	Description	F	%
Gender	Man	141	75.4
	Woman	46	24.6
Age ranges	18–25 years	24	12.8
	26–35 years	55	29.4
	36–45 years	49	26.2
	46–55 years	36	19.3
	> 56 years	23	12.3
Level of studies	Elementary	8	4.3
	Junior High school	28	15.0
	High School	28	15.0
	Technical school	23	12.3
	Bachelor's degree	79	42.2
	Postgraduate	21	11.2
	Administration and Finance	14	7.5
Area/department	High performance	104	55.6
	Sports Development	4	2.1
	General Direction	8	4.3
	Infrastructure	56	29.9
	OCDA	1	0.5

Note: OCDA = Control and Administrative Development Body.

To obtain a representative sample, a stratified sampling was carried out with proportional allocation for each of the areas and by sex (Table 2).

**Table 2: Selection of the simple by area/department and gender**

No	Area/Department	Total Men sample	%	Men sample	Total women sample	%	Women sample
1	Administration and Finance	16	4.4	8	11	3.0	6
2	High performance	156	42.9	80	46	12.6	24
3	Sports Development	7	2.0	4	1	0.3	0
4	General Direction	13	3.6	7	2	0.5	1
5	Infrastructure	80	22.0	41	29	8.0	15
6	OCDA	3	0.8	1	-	-	-
	Total	275	76%	141	89	24%	46

Note: OCDA= Control and Administrative Development Body

## 2.2 Instrument

The employee satisfaction survey for sports entities of Medina *et al.* (2009) was used. The scale was validated by experts in the Mexican context, however the psychometric properties they were not obtained. The instrument has six factors: workplace, material resources, safety and hygiene, work organization, recognition of their work, and global assessment, with a total of 28 items. The scale is Likert type, with values 1–4, where 1 = *Not satisfied*, 2 = *Barely satisfied*, 3 = *Somehow satisfied*, and 4 = *Very satisfied*. This four-value scale was chosen because it allows a better positioning of employees and prevents the lack of definition produced by the possibility of choosing a median value as a response. Each factor is theoretically defined as follows:

- *Workplace* in terms of arranging and adapting a space according to the area's needs.
- *Material resources* as inputs and tools available to perform their work.
- *Safety and hygiene* of the environment of your work with the established regulations, safe spaces, and a compatible environmental environment in mind, additionally to the functionality and ergonomics that together achieve greater productivity in the employee.
- *Work organization*, delimitation of their functions but with an openness to make proposals for efficiency, granting of responsibilities for information and fluid communication, as well as respect to schedules established at all levels of the organization.
- *Recognition* granted by or received from their performance, intrinsically or with incentives granted for the achievement of personal goals within the organization.
- *Overall assessment* of work, seeking the employee's satisfaction to achieve the objectives and the commitment he/she undertakes toward the organization for such commitment.

## 2.3 Procedure

First, the preliminary analysis was carried out, which involved a review of the employee's satisfaction instrument for sports organizations by experts in sports management and physical activity, based on which the relevant criteria and instructions were established for their enforcement. Second, a meeting was held with the General Director of CODESON, thereby obtaining approval for carrying out the investigation. Third, with prior authorization, a group of trained interviewers visited the work areas and explained the purpose of the study and how to complete carry out the instrument, as well as any doubts or suggestions related to it. It should be noted that the survey was self-administered with the presence of the interviewer; this means that it

was provided directly to the participants and the time invested in conducting the survey was 15 minutes.

## 2.4 Analysis of data

For the data analysis, the statistical software SPSS v.24 and LISREL 8.80 (Jöreskog & Sörbom, 2006) were used. Different techniques of data analysis were performed. First, data cleansing and the quality thereof was checked; second, descriptive parameters were obtained: the mean, standard deviation, item-total correlation, and Cronbach's alpha if the element is removed. Third, an exploratory factor analysis (EFA) was performed using the Kaiser-Meyer-Olkin (KMO) correlation matrix and Bartlett's sphericity test using the main axis extraction method with an oblique rotation criterion (Promax, kappa = 4). Fourth, confirmatory factor analysis (CFA) was carried out by considering the ordinal nature of the variables. The inputs used were polychoric correlations and asymptotic co-variance matrices; the estimation method employed was maximum likelihood (Bentler, 1995). A coefficient  $\chi^2/df$  lower than 3.0 represents a proper fit of the model (Kline, 2005). The comparative fit index (CFI) and the non-normed fit index (NNFI) above .90 indicate an acceptable fit (Hu & Bentler, 1999) for root mean square error of approximation (RMSEA). Satisfactory values below .05 and acceptable values below .08 are taken into consideration (Llorent-Segura, Ferreres-Traver, Hernández-Baeza, & Tomás-Marco, 2014). Finally, the reliability of each factor was determined using the Cronbach alpha index (Cronbach, 1951) and the composite reliability coefficient (CR) and mean extracted variance (AVE) were calculated, as well as correlations between factors using the Pearson coefficient.

## 3. RESULTS

After the analysis, it was observed that all the items adequately contributed to the scale and did not improve the overall reliability by eliminating any of the items. The scale obtained a total Cronbach alpha of 0.94 (see Table 3).

**Table 3: Descriptive statistics and Cronbach's, alpha if item is eliminated by factor ( $\alpha$ -x)**

Reagent	M	SD	<i>r<sub>ix</sub></i>	$\alpha$ -x
<b>Factor 1: Safety and hygiene (<math>\alpha = 0.88</math>)</b>				
9. The degree of enforcement of the rules on safety and hygiene in your workplace.	3.05	.83	.72	.86
11. The conditions at the workplace.	3.11	.72	.64	.87
10. The way in which the sports body takes the ergonomics and functionality in its work place into account.	3.07	.74	.73	.86
7. Indicate in global terms your degree of satisfaction with the physical and material means at your disposal for your work performance.	3.05	.82	.75	.85
8. The utensils and tools you use.	3.02	.82	.71	.86
12. How it responds to your needs in relation to the environmental conditions in which you carry out your work (such as heat and wind).	3.05	.86	.60	.88
<b>Factor 2: Overall valuation (<math>\alpha = 0.85</math>)</b>				
23. Indicate the willingness to adapt to your needs and interests in the performance of your work.	3.53	.62	.68	.82
24. Indicate your degree of commitment to the purpose of the sports entity.	3.64	.58	.63	.83
26. Indicate the willingness to meet your personal needs and interests.	3.40	.69	.61	.83
25. In general, indicate your degree of satisfaction with the work you do.	3.48	.71	.67	.82
27. Your degree of satisfaction with the environment you work in related to the performance of your job (such as personal relationships, cordiality, and collaboration).	3.40	.73	.64	.82
28. Indicate whether your personal expectations are satisfied with the work you do.	3.26	.77	.60	.83
<b>Factor 3: Recognition (<math>\alpha = 0.84</math>)</b>				

20. With the kind of recognition you have from your work.	3.15	.87	.65	.80
18. The possibilities of providing proposals for improvement in the overall functioning of the organization.	3.17	.85	.70	.79
19. The possibilities of contributing proposals for improvement in the performance of their work.	3.16	.84	.68	.80
21. With the economic retribution you receive with regard to similar positions to your own.	2.90	.91	.61	.81
22. Indicate the degree of satisfaction with the training possibilities (such as accreditation, certification, and training).	3.04	.84	.58	.82
<b>Factor 4: Place of work (<math>\alpha = 0.89</math>)</b>				
1. The adequacy of the space provided to do your work	3.26	.78	.76	.87
3. The amount of space provided to perform your work.	3.23	.83	.81	.83
2. The ease of having space to work.	3.23	.86	.80	.84
<b>Factor 5: Organization (<math>\alpha = 0.84</math>)</b>				
14. The structuring of the work schedule of your working day.	3.47	.71	.65	.80
15. The responsibility you assume in the performance of your work.	3.54	.67	.63	.81
13. The form of organization of the work that you carry out (team or directed).	3.38	.77	.73	.78
16. The possibilities of information and internal communication at your disposal.	3.22	.81	.59	.82
17. With the delimitation of the functions of your job.	3.10	.82	.61	.81
<b>Factor 6: Materials (<math>\alpha = 0.89</math>)</b>				
5. The material resources provided to carry out your work are adequate.	3.03	.76	.84	.81
4. Opportunity for the ease of having the necessary resources to carry out your work.	3.00	.78	.77	.86
6. The material resources are adequate to carry out your work.	3.05	.76	.77	.87

Note:  $\alpha$  = Cronbach's alpha, r<sub>ix</sub> = item-total.

**Factorial analysis:** To verify the suitability of the employee satisfaction instrument to the population studied, an EFA was performed on the 28 items and the adequacy of the sample was checked through the Bartlett sphericity test, and the adequacy index of the KMO sample. The value of the sample adequacy measure was optimal, with a KMO index of .91 and the Bartlett test was statistically significant with a value ( $\chi^2 = 3296.01$ ,  $gl = 378$ ;  $p < .001$ ), which leads to the conclusion that the application of the factor analysis is relevant. We extracted factors with eigen values of 1 or greater and that together account for 69.08% of the total variance (see Table 4).

**Table 4: Factor loadings, eigen values, percentages of variance by factor, total cumulative variance, and commonality**

Items	Factors						Communality
	1	2	3	4	5	6	
Item 9.	0.68						0.65
Item 11.	0.68						0.51
Item 10.	0.65						0.64
Item 7.	0.61						0.66
Item 8.	0.55						0.65
Item 12.	0.51						0.42
Item 23		0.80					0.65
Item 24.		0.79					0.57
Item 26.		0.61					0.50
Item 25.		0.52					0.69
Item 27.		0.50					0.50
Item 28		0.41					0.47
Item 20.			0.83				0.59
Item 18.			0.69				0.68
Item 19.			0.62				0.63
Item 21.			0.60				0.51
Item 22.			0.57				0.46



Item 1							0.77	0.74
Item 3.							0.75	0.67
Item 2.							0.73	0.75
Item 14.						0.77		0.62
Item 15.						0.76		0.55
Item 13.						0.66		0.70
Item 16.						0.45		0.65
Item 17.						0.35		0.52
Item 5.							0.87	0.78
Item 4.							0.73	0.68
Item 6.							0.73	0.69
Eigen values	11.24	2.67	1.77	1.34	1.25	1.07		-
% of variance	40.15	9.55	6.32	4.78	4.47	3.81		69.08

Note: 1 = Safety and hygiene, 2 = Overall rating, 3 = Recognition, 4 = Workplace, 5 = Organization, 6 = Material resources.

**Confirmatory factor analysis:** To verify that the scale follows the expected factor structure, a confirmatory factor analysis (CFA) was carried out using the LISREL program 8.80 (Jöreskog & Sörbom, 2006). The adequacy of the model was analyzed by following some recommendations through different indexes-the value of chi-square divided by degrees of freedom ( $\chi^2/df$ ) shall be less than three (Kline, 2005), NNFI, CFI above 0.90 (Hu & Bentler, 1995), and RMSEA less than 0.06 to a maximum value of 0.08 (Byrne, 2000). Therefore, the index of goodness of fit of the model was satisfactory:  $\chi^2/df = 1.29$ , NNFI = 0.99, CFI = 0.99, and RMSEA = 0.03.

**Internal consistency analysis:** The internal consistency was calculated using the Cronbach alpha index. Regarding the resulting factors that make up the instrument, the reliability analysis showed adequate internal consistency, with values, in this case higher than 0.70 (Cronbach, 1951; Oviedo & Campos-Arias, 2005) between 0.84 and 0.89 (see Table 3).

In addition, we calculated the CR based on CFA higher than .70 (Hair, Black, Babin, Anderson, & Tatham, 2006; Hair, Black, Babin, & Anderson, 2010), resulting in values between 0.88 and 0.94. Average Variance Extracted (AVE), on the other hand, showed adequate values, in this case greater than 0.50 (Hair *et al.*, 2006; Hair *et al.*, 2010) between 0.60 and 0.84 (see Table 5).

**Table 5: Composite reliability, average variance extracted, and discriminant validity**

Factor	CR	AVE	Factors						
			1	2	3	4	5	6	
1	0.94	0.65	-						
2	0.91	0.62	0.36	-					
3	0.88	0.60	0.53	0.53	-				
4	0.94	0.83	0.55	0.30	0.48	-			
5	0.89	0.62	0.48	0.34	0.59	0.41	-		
6	0.94	0.84	0.61	0.33	0.55	0.46	0.48	-	

Note: CR = composite reliability, AVE = average variance extracted, 1 = Safety and hygiene, 2 = Overall assessment, 3 = Recognition, 4 = Workplace, 5 = Organization, 6 = Material resources.

#### 4. DISCUSSION

Nowadays, EFA is one of the statistical methods used more frequently within research in social and psychological sciences, as well as sports. Therefore, it is one of the techniques that require more decisions on the part of the researcher now to carry out this analysis (Frías-Navarro &

Pascual, 2012). The main purpose of this study was to develop the validity and reliability of the employee satisfaction instrument (Medina *et al.*, 2009), so that the results obtained within this research help in obtaining appropriate satisfactory values. In the first place, statistical analyses of each of the items were carried out taking the preservation of an item as criteria along with a compulsion that the item-total correlation is should be equal or greater than .30 (Nuviala, Tamayo, Nuviala, González, & Fernández, 2010; Pérez-Ciordia, Guillén-Grima, Brugos, Aguinaga, & Fernández-Martínez, 2012).

It is worth mentioning that the relevant quantitative statistics were obtained to strengthen the instrument, for which an EFA was carried out using the Bartlett sphericity test (Bartlett, 1950) and the KMO sample adequacy index (Kaiser, 1974), to determine the psychometric properties, obtaining a satisfactory values, with statistically significant results for the factorial analysis. This leads to the conclusion that the use of the factor analysis is relevant. Six factors were extracted with values greater than 1 and these provided an explanation of the variance as minimum 3.5%; for this, the criterion used was taking all those items from each factor with a minimum saturation of 0.40 (Pérez-Ciordia *et al.*, 2012). Gorsuch (1997) also points out that a factor solution is satisfactory if it explains at least 50% of the total variance and it is generally expected that the first factor meets the most relevant aspects and accumulates the highest variance percentage. On the other hand, there are authors who consider one solution that represents 60% (at least) of the total as satisfactory (Hair, Anderson, Tatham, & Black, 2004). For this study the six factors extracted together successfully meet the suggestions.

To confirm the factorial structure, CFA was carried out by following some recommendations, so that the value of chi-square divided by the degrees of freedom ( $\chi^2/df$ ) below three indicates a good fit of the model (Kline, 2005). Although, according to Hu and Bentler (1999), these recommendations indicate that in the quotient of chi-square and degrees of freedom, a model considered perfect would have a value of 1.0 and ratios below 2.0 would be considered indicators of a very good fit of the model, whereas the values below 5.0 are considered acceptable. On the other hand, the NNFI and the CFI obtained are above .90, indicating a satisfactory fit (Hair *et al.*, 2006; Hu & Bentler, 1995) and an RMSEA of less than .06 to a maximum value of .08 are considered satisfactory (Byrne, 2000; Nuviala *et al.*, 2010). Due to the latter, per the recommendations, the goodness of fit indexes of the model of the study were satisfactory.

The reliability of the instrument was verified by internal consistency analysis, and the Cronbach alpha coefficient (Cronbach, 1951) was determined for each factor, considering referenced values (Kaplan & Saccuzzo, 2006; Oviedo & Campos-Arias, 2005). To accept the internal consistency, it is stated that the results obtained are good for all the factors, bearing in mind that there is a great homogeneity between the items of each factor.

To further strengthen the study, internal consistency was calculated through the CR, which is more adequate than the Cronbach's alpha value (Lévy-Mangin & Varela, 2006), with indexes above 0.70 being considered as appropriate (Hair *et al.*, 2006; Hair *et al.*, 2010). Therefore, the values obtained from the six factors are higher than the recommendation.

The AVE was estimated, indicating that the higher the value, the more representative are the indicators of the critical dimension in which they are loaded. On the other hand, values above 0.50 are usually considered a good fit (Hair *et al.*, 2006; Hair *et al.*, 2010). In the present study the AVE and discriminant validity was suitable.

## 5. CONCLUSIONS

According to the presented results, the purpose of this study was fulfilled. This study has allowed to know the psychometric properties of an instrument that measures the satisfaction of the employees of a sports entity. It proves to be useful tool for the area of sports management and



research. It is applicable to any sports organization or organization since it shows good internal consistency. However, one of the limitations of the present study is that the sample to which it was applied was small, so for future research it is recommended to apply to larger populations to further assess its usefulness.

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