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Contaduría y Administración

Contaduría y Administración 66 (4), 2021, 1-27

Scale to measure types of organizational culture: Construction and psychometric properties

Escala para medir tipos de cultura organizacional: construcción y propiedades psicométricas

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Received June 3, 2018; accepted December 8, 2020
Available online August 17, 2023

Abstract

The objective of this research was to construct a Scale of Types of Organizational Culture (STOC) that is validated, reliable and standardized to carry out diagnoses and evaluations of this construct in organizations. The importance of measuring organizational culture is in the effect it has on the competitiveness of the organizations. For this purpose, a scale was constructed that measures twelve types of culture and three organizational values, based on a theoretical model. The scale was applied to a sample of 521 workers. The results show a scale of 92 items that has adequate levels of factor validity (exploratory and confirmatory) and reliability. In addition, the results of the standardization of the scale are presented, which allows determining the levels and profiles of the types of culture that prevail in organizations to support interventions for change or modification of the organizational culture.

JEL Code: D21, D23, M14
Keywords: organizational behavior; organizational culture; corporate culture; organizations; measurement

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Peer Review under the responsibility of Universidad Nacional Autónoma de México.

http://dx.doi.org/10.22201/fca.24488410e.2021.2066
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Resumen

El objetivo de esta investigación fue construir una Escala de Tipos de Cultura Organizacional (ETCO) que este validada, confiabilizada y estandarizada para realizar diagnósticos y evaluaciones de este constructo en las organizaciones. La importancia de medir la cultura organizacional radica en el efecto que tiene en la competitividad de las organizaciones. Para este propósito se construyó una escala que mide doce tipos de cultura y tres valores organizacionales, basada en un modelo teórico. La escala se aplicó a una muestra de 521 trabajadores. Los resultados arrojan una escala de 92 reactivos que cuenta con adecuados niveles de validez factorial (exploratoria y confirmatoria) y confiabilidad. Además, se presentan los resultados de la estandarización de la escala que permite determinar los niveles y perfiles de los tipos de cultura que prevalecen en las organizaciones para sustentar intervenciones de cambio o modificación de la cultura organizacional.

Código JEL: D21, D23, M14
Palabras clave: comportamiento organizacional; cultura organizacional; cultura corporativa; organizaciones; medición

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Introduction

Organizational culture has had a preponderant presence in the academic literature in the United States, starting with the article "On Studying Organizational Cultures," published by Andrew Pettigrew in 1979 in the Administrative Science Quarterly.

Also, since the article "Corporate culture: The hard-to-change values that spell success or failure" was published in 1980 in Business Week magazine, the number of publications, studies, and research on the subject of organizational culture and its relation to the competitiveness of companies has increased.

Organizational culture is important to organizations' productivity and competitiveness (Cújar, Ramos, Hernández, & López, 2013). Also, organizational culture is considered an important factor for organizational change (Jung, Scott, Davies, Bower, Whalley, McNally, & Mannion, 2009), efficiency, and achievement of organizational results (Toca & Carrillo, 2009).

According to Verbeke, Volgeringn, and Hessels (2002), organizational culture is fundamentally based on traditions derived from beliefs, ideas, and values. It is a construct studied mainly by anthropology and has been studied holistically because it integrates cognitive and behavioral patterns. On the cognitive side, organizational culture is conceived as a system of learned knowledge, standards, ideas, beliefs, values, and regulations used to perform and make decisions, enabling workers to behave in a way that is acceptable, valued, and expected by the organization.

There is currently a large body of published research on organizational culture and its association with other variables. It has been measured using quantitative and qualitative methods and evaluated in different types of organizations. Nevertheless, there are a few scales and instruments for measuring organizational culture for the Spanish-speaking population.

This work aims to construct, validate, make reliable, and standardize a scale to measure the types of organizational culture in Mexican organizations to conduct diagnoses and evaluations of this construct in organizations. The purpose of this scale is to provide an instrument for mapping the cultural profiles of organizations that can be used as a basis for interventions to change or modify organizational culture.

Definition of organizational culture

Traditionally, the definition and study of organizational culture have been attributed to anthropology (Smircich, 1983). There are multiple definitions of organizational culture in the literature, but it should be noted that there is no agreement on how to define organizational culture.

Kast and Rosenzweig (1988) define organizational culture as a system of shared values and beliefs that interact with the organizational members, organizational structure, and control systems of a company to produce behavioral regulations.

According to Rousseau (2012), culture comprises values, regulations, and behaviors shared by the organization's members. Meanwhile, Jaques (1972) defines organizational culture as a set of customs or traditions regarding the way of thinking and doing things, which are shared to a greater or lesser degree by all members of the organization and which new members must learn and at least partially accept in order to be accepted in the organization. This last definition identifies three important characteristics: organizational culture is learned, shared, and transmitted.

Definitions of organizational culture are numerous, complex, and divergent (Toca & Carrillo, 2009). Nevertheless, essential components in such definitions are expressed as a set of beliefs, ideas, basic assumptions or presumptions, values, behaviors, patterns, and regulations expressed through artifacts, symbols, verbal or written language, and slogans. One of the most widely accepted definitions of organizational culture is that of Edgar Schein (1990), who defines organizational culture as a pattern of basic assumptions that a group has invented, discovered, or developed while learning to solve its problems of external adaptation and internal integration. These assumptions are valid to the extent that they are taught to new personnel as the correct way to perceive, think, and feel about the problems they face and to make decisions.

Measuring organizational culture

The measurement of organizational culture originates in social anthropology, social psychology, and organizational psychology using qualitative and quantitative approaches. From a quantitative point of view, various instruments have been identified to measure organizational culture. Major instruments include those referenced by David, Valas, and Raghunathan (2018); Pauzuoliene, Simanskiene, and Sksnelyte (2017); Jung, Scott, Davies, Bower, Whalley, McNally, and Mannion (2009); Scott, Mannion, Davies, and Marshall (2003): the Organizational Culture Inventory (OCI) by Cooke and Lafferty (1987), the Organizational Culture Survey by Glaser, Zamanaou and Hacker (1987), the Organizational Culture Inventory by Cooke and Rousseau (1988), the Survey of Organizational Culture by Tucker, McCoy, and Evans (1990), the Hofstede's Organizational Culture Questionnaire by Hofstede, Neuijen, Ohayv, and Sanders (1990), the Organizational Culture Assessment Instrument (OCAI) by Cameron and Freeman (1991) and Cameron and Quinn (1991), the Harrison's Organizational Ideology Questionnaire (HOIQ) by Sieveking, Bellet, and Marston (1993), the MacKensie's Culture Questionnaire by MacKensie (1995), the Corporate Culture Questionnaire by Walter, Symon, and Davies (1996), the Organizational Culture Survey by Denison and Neale (1996) and Denison and Mishra (1995), the Focus Questionnaire by Muijen *et al.* , (1999), the Quality Improvement Implementation Survey (QIIS) by Shortell *et al.* , (2000), the Practice Culture Questionnaire (PCQ) by Stevenson (2000), the Global Leadership & Organizational Behavior Effectiveness Survey (GLOBE) by House, Javidan, Hanges, and Dorfman (2004), the Organizational Culture Profile (OCP) by Sarros, Gray, Densten, and Cooper (2005), the Japanese Organizational Culture Scale by Tang, Kim, and O'Donald (2000), the Questionnaire on Organizational Cultures by Mitrovic, Brubic-Nesic, Milisavljevic, Melovic, and Babinokova (2014), the Organizational Culture Assessment by Pauzuoliene, Simanskiene, and Siksnelyte (2017), and the Organizational Culture Diagnostic Scale (EDCO) by Robles, Montes, Rodriguez, and Ortega (2018).

It should be noted that the measurement instruments mentioned above are instruments that measure: (a) elements of organizational culture such as organizational values, ritual symbols (traditions, ceremonies), heroes/leaders, communication networks, stories, teamwork and collaboration, client focus, direction, vision, mission, goals, innovations, and social responsibility, among others (Pauzuoliene, Simanskiene, & Siksnelyte, 2017); b) organizational measures and values (Jung, Scott, Davies, Bower, Whalley, McNally, & Mannion, 2009); and c) organizational culture types focused mainly on clan-type, adhocratic, hierarchical, and market culture (Hammer, 2004). Therefore, it is possible that not all dimensions and types of organizational culture can be covered on a single scale.

The instruments mentioned above differ in their characteristics. They measure between 4 and 13 factors or dimensions. In length, they range from 15 to 135 items. Most are validated and reliable (with

Cronbach's Alphas above 0.60). The most widely used instruments at the international level are the OCI by Cooke and Lafferty (1987), the OCAI by Cameron and Freeman (1991), and the Organizational Culture Index by Denison and Neale (1996). Except for the EDCO by Robles, Montes, Rodriguez, and Ortega (2018), most instruments have been designed in Anglo-Saxon countries.

Other instruments to measure organizational culture have been developed in specific sectors, such as the Hospital Culture Questionnaire (Sieveking, Bellet, & Marston, 1993), the Nursing Unit Cultural Assessment Tool (Coeling & Simms, 1993), and the Practice Culture Questionnaire (Stevenson, 2000), among others.

In Spanish-speaking countries, the Spanish adaptation of the Denison Organizational Culture Survey by Bonavia, Prado, and García-Hernández (2010) and Bonavia, Prado, and Barberá (2009), and the EDCO by Robles, Montes, Rodríguez, and Ortega (2018) stand out, showing a reduced number of scales to measure organizational culture for the Spanish-speaking population, in the Mexican, Latin American, and Ibero-American context.

Determining the most appropriate instrument to measure organizational culture will depend on the objective and the context in which culture assessment is desired (Pauzuoliene, Simanskiene, & Siksnelyte, 2017). Therefore, this research offers a valid, reliable, and standardized instrument to measure organizational culture using a theoretical model.

Theoretical and conceptual basis of Scale of Types of Organizational Culture (STOC)

The STOC has been designed to measure 12 types of organizational culture in four groups and three organizational values. The groups of STOC factors are presented schematically in Figure 1. It should be noted that the factor structure of the STOC is based on the Values in Competence Model of Cameron and Quinn (1999, 2006) and Denison and Neale (1996), as shown below. This model was chosen because it comprehensively addresses the types of culture, focusing on the organization's inside and outside. The STOC Model is made up of two dimensions in the form of Cartesian axes that intersect to form four quadrants where the five groups of organizational culture types are located (Cameron & Quinn, 1999):

- On the horizontal axis, there are:
    - External emphasis (stakeholders of the organization) — The external dimension includes the culture of change and innovation (Group 1) and the culture of task and results (Group 2). With these types of cultures, the organization can satisfy the clients' needs, and thus the achievement of goals and objectives generates adequate levels of productivity, focusing on the task and efficiency.

- Internal emphasis (members of the organization) — The internal dimension considers a culture of teamwork (Group 4) and a culture of employee welfare (Group 3), which will enable the organization's objectives to be achieved together.

- The vertical axis shows:
  - Emphasis on flexibility (dynamism, innovation, change, teamwork) — The organization's flexibility includes a culture of change and innovation (Group 1) and a culture of teamwork (Group 4), which will enable the organization to adapt to the demands and conditions of the environment and the needs and expectations of the clients.
  - Emphasis on stability (control, results, and predictability) — There are task and results culture (Group 2) and staff welfare culture (Group 3) for organizational stability.
- At the center of the culture model, the types characterized by organizational values have been placed (Group 5): a culture of respect, honesty, commitment, and responsibility.

It should be noted that each group of factors comprises three types of organizational culture, generating four groups and 15 types of organizational culture (Figure 1).

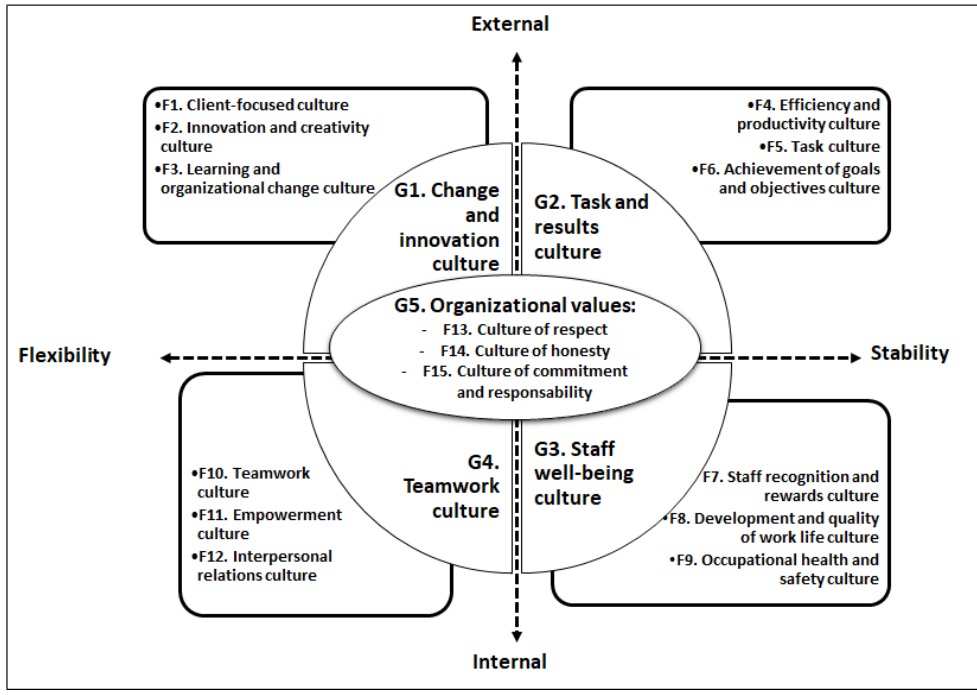

Figure 1. Factor structure of the Scale of Types of Organizational Culture (STOC)
Source: created by the authors

Method

Type and research design

A descriptive, ex post facto research study was conducted using a non-experimental design.

Variables

The central variable of this research is the types of organizational culture.

- Conceptual definition. This variable is defined as a set of organizational cultures designed or developed by an organization to face its problems of internal and external adaptation, work performance, and the achievement of organizational objectives. These forms of culture are valid and guide the way of thinking, feeling, and perceiving problems in the organization, and acting, performing, or behaving within itself (Schein, 1988). These forms or types of organizational culture include assumptions, beliefs, behaviors, and values shared by workers (invented, created, discovered, or developed) (Schein, 1988). The types of organizational culture considered in STOC are presented in Figure 1.
- Operational definition. The score obtained in response to the STOC items. A summative Likert scale was used, whose score was divided by the number of items for each factor.

Factor structure of the STOC

The factor structure of the STOC was composed of 12 factors or types of organizational culture, distributed in 4 groups and a group of three organizational values (Table 1): G1. Change and innovation culture, G2. Task and results culture, G3. Staff well-being culture, G4. Teamwork culture, and G5. Organizational values. It should be noted that these factors were integrated considering the models of Cameron and Quinn (1999, 2006) and Denison and Neale (1996).

Table 1
Factor structure of the STOC

Group	Types of organizational culture
	F1. Client-focused culture
G1. Change and innovation culture	F2. Innovation and creativity culture
	F3. Learning and organizational change culture
	F4. Efficiency and productivity culture
G2. Task and results culture	F5. Task culture
	F6. Achievement of goals and objectives culture
	F7. Staff recognition and rewards culture
G3. Staff well-being culture	F8. Developmment and quality of work life culture
	F9. Occupational health and safety culture
	F10. Teamwork culture
G4. Teamwork culture	F11. Empowerment culture
	F12. Interpersonal relations culture
	F13. Culture of respect
G5. Organizational values	F14. Culture of honesty
	F15. Culture of commitment and responsibility

Source: created by the authors based on several authors

Stages of STOC construction

The stages followed in the construction of the scale were as follows:

a) Systematic review of the literature. This review was carried out to determine the definition of organizational culture and analyze theoretical models and measurement scales previously designed and published.

b) Identification and analysis of organizational values of 60 public and 62 private Mexican organizations.

c) Application of natural semantic networks (NSN) to identify the psychological meanings of the construct in a sample of 50 Mexican workers. The methodology proposed by Reyes-Lagunes (1993) was used.

d) Items bank design. The items bank comprised 312 items (approximately 20 items per factor: 10 positive and 10 negative). Fifty percent of the items were designed based on the literature review results, and the remaining 50% on the results obtained in the NSN. This item design allowed the integration of a scale with counterbalanced items (positive and negative as well as theoretical and NSN) as recommended by Reyes-Lagunes (1993) and Reyes-Lagunes, García, and Barragán (2008).

e) Interjudge validity. A validity test was conducted with 50 judges with psychometrics and organizational psychology expertise. At this stage, 72 items that did not obtain at least 70%

agreement were eliminated. The comments and observations made on the wording of the items were also considered to redesign them in a much more robust manner.

f) Scale design. The scale was designed with a booklet that included two sections (scale items and sociodemographic variables). The response scale was Likert-type with four options: strongly disagree, disagree, agree, and strongly agree. The STOC was composed of 240 (16 items per factor) to be piloted and applied.

g) Application of the scale to determine its psychometric properties (validity and reliability). The scale was applied to a sample of 521 Mexican workers in this last stage. The final scale consisted of 92 items.

Population and sample

The population to which the STOC was applied consisted of Mexican workers in both public and private organizations. The sample to validate, make reliable, and standardize the STOC was intentional and comprised 521 workers from Mexican organizations. The inclusion criteria considered workers with at least six months of seniority in the organization.

Of the sample, 54.3% are female workers, and 45.3% are male. The average age was 41.17 years. A total of 8.7% have secondary education, 36.5% have a baccalaureate diploma, 38.8% have a bachelor's degree, and 16.2% have postgraduate studies. 83.0% occupy operational level positions, 13.7% middle management, and the remaining 3.3% occupy management positions. The sample reported a net monthly salary of MXN 10 984.01. 72.9% of the personnel in the sample belong to public organizations and 27.1% to private companies. According to the size of the organization, 66.8% work in large organizations (101 or more workers), 12.4% in medium-sized organizations (51 to 100 workers), 12.2% in small organizations (11 to 50 workers), and 8.5% in micro-organizations (up to 10 workers).

Procedure

The application of the STOC was performed with the prior authorization of the employee and the organization where the employee works. Instructions and instruments were provided. Questions were answered. Once the STOC was applied, the data were entered in the SPSS statistical package, version 21.

Data analysis

The statistical analyses performed were as follows: (a) dispersion analysis of each item to identify that they presented a skewed behavior different from the normal curve, (b) item discrimination analysis using *t-student* analysis in order to identify that the items discriminated between high (75th percentile) and low (25th percentile) scores, (c) exploratory factorial validity performed with factor analysis using SPSS version 21 and confirmatory factorial validity performed with structural equation analysis using AMOS version 21 software, d) reliability analysis of the scale by estimating Cronbach's Alpha, e) descriptive statistics both to characterize the sample and the scale factors, and f) to determine significant differences between the STOC factors with variables such as job level, company size, and type of organization, analysis of variance (ANOVA) and *t-student* analysis for independent samples were performed.

It should be noted that the factorial validity was conducted by groups of factors of the STOC due to the sample size in order not to exceed ten cases per item (Hair, Anderson, Tatham, & Black, 2005). In the exploratory and confirmatory factor analysis, factor loadings greater than 0.40 were accepted.

Results

In the dispersion analysis of each item, the item discrimination analysis, the factor analysis, and the reliability analysis, 148 items were eliminated.

Exploratory validity of the factors: G1 change and innovation culture

In the G1 Change and innovation culture, three factors were validated: F1 Client-oriented culture with four items, F2 Innovation and creativity culture with three items, and F3 Learning and organizational change culture with six items (Table 2). The cumulative explained variance in these three factors was 53.44%.

Table 2
Exploratory factor analysis of the factors: G1 Change and innovation culture of STOC

Items	F1. Client-focused culture	F2. Innovation and creativity culture	F3. Learning and organizational change culture
42. * (42)	.724	-.012	-.043
55. * (55)	.797	-.161	-.021
64. * (64)	.817	.104	.013
75. * (75)	.798	-.021	.057
19. (19)	-.073	.787	.115
70. (70)	.102	.552	.383
78. (78)	-.056	.788	.159
21. (21)	.134	.138	.620
84. (84)	-.068	.240	.602
27. (27)	-.057	.138	.645
34. (34)	.089	-.066	.684
41. (41)	-.026	.023	.721
62. (62)	-.050	.223	.653
Percentage of explained variance	18.01	12.90	22.53
Percentage of cumulative explained variance	18.01	30.91	53.44

Note. *Kaiser-Meyer-Olkin* measure = 0.828; Bartlet's test of sphericity: Chi-square = 1873.43, *gl*=91, *p*=0.000. *Reverse items (in parentheses, the item number of the questionnaire presented in the Appendix is shown)
Source: created by the authors

Exploratory validity of the factors: G2 task and results culture

Table 3 shows the results of the exploratory factor analysis performed for G2 Task and results culture. Three factors were validated in this group: F4 Efficiency and productivity culture with seven items, F5 Task culture with seven items, and F6 Aachievement of goals and objectives culture with six items. The cumulative explained variance was 41.14%.

Table 3
Exploratory factor analysis of the factors: G2 Task and results culture of STOC

Items	F4. Efficiency and productivity culture	F5. Task culture	F6. Achievement of goals and objectives culture
23. (23)	.558	-.065	.006
36. (36)	.462	-.198	.043
50. (50)	.577	.068	.141
60. (60)	.632	-.092	.015
49. (49)	.575	.182	-.005
72. (72)	.720	-.166	.053
90. (90)	.650	-.137	-.016
2. (2)	-.073	.647	-.030
6. (6)	-.143	.531	-.003
13. (13)	.053	.695	.041
63. (63)	-.255	.500	-.025
82. (82)	-.265	.539	.038
1. (1)	.121	.613	-.019
54. (54)	.022	.651	-.030
7. * (7)	-.034	.018	.651
32.* (32)	.125	.031	.643
39. * (39)	.024	-.050	.721
46. * (46)	.074	.017	.673
73. * (73)	.041	.019	.674
83.* (83)	-.021	-.085	.727
Percentage of explained variance	13.67	13.36	14.11
Percentage of cumulative explained variance	13.67	27.03	41.14

Note. Kaiser-Meyer-Olkin measure = *0.789;* Bartlet's test of sphericity = 2040.32, gl=190, p=0.000. * Reverse items (in parentheses is the number of items of the questionnaire presented in the Appendix)
Source: created by the authors

Exploratory validity of the factors: G3 staff well-being culture

Regarding the third group referring to the culture oriented to staff well-being at work, three factors were validated: F7 Staff recognition and rewards culture was validated with seven items, F8 Work life development and quality of work life were validated with ten items, and F9 Occupational health and safety culture was validated with six items, as shown in Table 4. The percentage of variance explained for these three factors was 49.21%.

Table 4
Exploratory factor validity of the factors: G3 Staff well-being culture of STOC

Items	F8. Development and quality of work life culture	F7. Staff recognition and rewards culture	F9. Occupational health and safety culture
9. * (9)	.632	-.087	.075
14. * (14)	.431	-.215	.205
37. * (37)	.664	-.073	.096
66. * (66)	.682	-.046	.062
81. * (81)	.685	-.003	.018
38. * (38)	.642	.042	-.052
43. * (43)	.708	.023	-.110
59. * (59)	.705	-.036	-.077
76. * (76)	.699	.139	-.048
91. * (91)	.686	.179	-.149
10. (10)	.026	.583	.225
17. (17)	.022	.666	.191
51. (51)	-.094	.729	.212
58. (58)	.014	.732	.022
68. (68)	.010	.758	.205
74. (74)	-.011	.604	.356
89. (89)	.006	.737	.217
18. (18)	.031	-.004	.751
31. (31)	.060	.286	.718
57. (57)	-.063	.374	.608
79. (79)	-.025	.335	.623
85. (85)	-.015	.428	.604
87. (87)	-.037	.246	.534
Percentage of variance explained	18.92	17.49	12.79
Percentage of cumulative explained variance	18.92	36.42	49.21

Note. Kaiser-Meyer-Olkin measure = 0.889*;* Bartlet's test of sphericity = 4295.56, gl=253, p=0.000.
*Reverse items (in parentheses, the item number of the questionnaire presented in the Appendix is shown)
Source: created by the authors

Exploratory validity of the factors: G4 teamwork culture

In Group 4 concerning teamwork-oriented culture, three factors were validated: F10 Teamwork culture was validated with seven items, F11 Empowerment culture was validated with seven items, and F12 Interpersonal relations culture was validated with six items, as shown in Table 5. The percentage of variance explained was 46.97%.

Table 5
Exploratory factor validity of the factors: G4 Teamwork culture of STOC

Items	F10. Teamwork culture	F11. Empowerment culture	F12. Interpersonal relations culture
8. (8)	.698	-.031	.181
22. (22)	.707	.048	.119
24. (24)	.746	.022	.234
30. (30)	.737	-.054	.074
35. (35)	.662	.024	.232
67. (67)	.697	.060	.190
92. (92)	.600	.072	.116
3. * (3)	.001	.538	-.114
20. * (20)	.160	.691	-.102
26. * (26)	-.181	.645	.190
47. * (47)	-.046	.690	.045
53. * (53)	.029	.706	.018
69. * (69)	.141	.622	-.118
88. * (88)	.040	.736	.090
5. (5)	.032	-.163	.575
16. (16)	.248	-.057	.496
33. (33)	.476	.050	.395
61. (61)	.415	.079	.535
65. (65)	.279	.074	.634
71. (71)	.223	.065	.698
Percentage of variance explained	20.21	15.74	11.01
Percentage of cumulative explained variance	20.21	35.96	46.97

Note. Kaiser-Meyer-Olkin measure = 0.856; Bartlet's test of sphericity = 3071.02, gl=190, p=0.000.
*Reverse items (in parentheses, the item number of the questionnaire presented in the Appendix is shown)
Source: created by the authors

Exploratory validity of the factors: G5 organizational values

In the fifth group referring to organizational values, three factors were validated: F13 Culture of respect was validated with six items F14 Culture of honesty was validated with six items, and F15 Culture of commitment and responsibility was validated with four items (Table 6). The percentage of variance explained for these three factors was 51.52%, as shown in Table 6.

Table 6
Exploratory factor validity of the factors: G5 Organizational values of STOC

Items	F13. Culture of respect	F14. Culture of honesty	F15. Culture of commitment and responsibility
4. (4)	.532	-.035	.022
29. (29)	.746	.017	.017
44. (44)	.774	-.010	-.002
45. (45)	.720	-.006	.037
48. (48)	.714	.026	.001
56. (56)	.653	-.011	-.211
11. * (11)	.028	.648	-.025
12. * (12)	.025	.732	.100
25. * (25)	.062	.717	.113
52. * (52)	-.103	.725	.061
77. * (77)	-.006	.804	.037
86. * (86)	-.046	.713	.139
28. * (28)	-.057	.129	.676
40. * (40)	-.024	.093	.771
15. * (15)	-.026	-.095	.761
80. * (80)	.037	.198	.613
Percentage of variance explained	20.15	18.23	13.14
Percentage of cumulative explained variance	20.15	38.38	51.52

Note. Kaiser-Meyer-Olkin measure = 0.814; Bartlet's test of sphericity = 2182.61, gl=120, p=0.000
*Reverse items (in parentheses, the item number of the questionnaire presented in the Appendix is shown)
Source: created by the authors

Confirmatory validity of the STOC

Confirmatory factorial validity was performed with structural equation analysis using Amos version 21 software. The 15 STOC factors integrated into 12 types of organizational culture and three organizational values were confirmed. Table 7 presents the results obtained for the absolute fit (GFI, RMSR and RMSEA), incremental fit (NFI) and parsimonious fit (normed Chi-square) indices of the factor analyses performed by structural equation analysis. The values obtained for the Goodness of Fit Index (GFI) were above 0.90, the root mean square residual (RMSR) was close to 0 and less than 0.08, the root mean square error of approximation (RMSEA) was less than 0.08, the normed fit index (NFI) was greater than 0.90, and the parsimony index measured with the normed Chi-squared index was less than 5 in all cases (Hair, Anderson, Tatham, & Black, 2005). These results verify that the STOC is an instrument with adequate construct validity.

Table 7
Results of the confirmatory factor analysis with structural equation analysis of the STOC factors

Types of organizational culture	X^2	*gl*	X^2 Standard (X^2/gl)	GFI	NFI	RMSR	RMSEA
F1. Client-focused culture F2. Innovation and creativity culture F3. Learning and organizational change culture	108.441	58	1.86	.969	.935	.028	.041
F4. Efficiency and productivity culture F5. Task culture F6. Achievement of goals and results culture	193.032	150	1.28	.965	.907	.024	.023
F7. Staff recognition and rewards culture F8. Development and quality of work life culture F9. Occupational health and safety culture	417.464	219	1.90	.934	.904	.032	.042
F10. Teamwork culture F11. Empowerment culture F12. Interpersonal relations culture	287.782	154	1.86	.949	.908	.025	.041
F13. Culture of respect F14. Culture of honesty F15. Culture of commitment and responsibility	156.574	95	1.64	.963	.929	.025	.035

Note. X^2= Chi-Square; gl=degrees of freedom; GFI= Goodness of Fit Index; NFI= Normed Fit Index; RMSR= Root Mean Square Residual; RMSEA= Root Mean Square Error of Approximation.
Source: created by the authors.

STOC reliability

Table 8 shows the results of the reliability analysis performed on the STOC. Cronbach's Alpha values ranged from 0.652 to 0.852. The overall Cronbach's Alpha for the STOC was 0.826. A total of 92 items were validated and reliably verified, and a total of 148 items were eliminated.

Table 8
STOC Reliability

Groups of organizational culture types	Types of organizational culture	Final items	Cronbach's Alpha
G1. Change and innovation culture	F1. Client-focused culture	4	0.796
	F2. Innovation and creativity culture	3	0.652
	F3. Learning and organizational change culture	6	0.760
G2. Task and results culture	F4. Efficiency and productivity Culture	7	0.713
	F5. Task culture	7	0.716
	F6. Achievement of goals and objectives culture	6	0.770
G3. Staff well-being culture	F7. Staff recognition and rewards culture	7	0.852
	F8. Development and quality of work life culture	10	0.743
	F9. Occupational health and safety culture	6	0.805
G4. Teamwork culture	F10. Teamwork culture	7	0.845
	F11. Empowerment culture	7	0.786
	F12. Interpersonal relations culture	6	0.701
G5. Organizational values	F13. Culture of respect	6	0.779
	F14. Culture of honesty	6	0.820
	F15. Culture of commitment and responsibility	4	0.683
Total	15	92	0.826

Source: created by the authors

Descriptive profile of the types of organizational culture

Table 9 shows the descriptive statistics obtained for the STOC factors. The lowest scores were presented in F5 Task culture (mean=2.24), while the highest average was in F12 Culture of interpersonal relations (mean=2.95).

Table 9
Descriptive statistics of the STOC

Factors	n	Mean (M)	Median	Mode	SD (S)	Minimum	Maximum
F1. Client-focused culture	521	2.62	2.75	2.75	0.69	1.00	4.00
F2. Innovation and creativity culture	521	2.81	3.00	3.00	0.56	1.00	4.00
F3. Learning and organizational change culture	521	2.71	2.67	3.00	0.54	1.00	4.00
F4. Efficiency and productivity culture	521	2.75	2.71	3.00	0.46	1.29	4.00
F5. Task culture	521	2.24	2.29	2.43	0.50	1.00	3.71
F6. Achievement of goals and objectives culture	521	2.56	2.50	2.33	0.59	1.00	4.00
F7. Staff recognition and rewards culture	521	2.55	2.57	3.00	0.62	1.00	4.00
F8. Development and quality of work life culture	521	2.57	2.60	2.50	0.58	1.00	4.00
F9. Occupational health and safety culture	521	2.75	2.83	3.00	0.57	1.00	4.00
F10. Teamwork culture	521	2.79	2.86	3.00	0.58	1.00	4.00
F11. Empowerment culture	521	2.55	2.57	2.14	0.56	1.00	4.00

F12. Interpersonal relations culture	521	2.95	3.00	3.00	0.47	1.17	4.00
F13. Culture of respect	521	2.93	3.00	3.00	0.54	1.00	4.00
F14. Culture of honesty	521	2.61	2.67	3.00	0.66	1.00	4.00
F15. Culture of commitment and responsibility	521	2.52	2.50	3.00	0.63	1.00	4.00

Note. SD=standard deviation, M=mean (regulations), S=standard deviation (regulations)
Source: created by the authors

Figure 2 shows in graph form the organizational culture profile in the sample considered in this research. This figure shows that the organizational culture mainly focuses on respect, occupational health and safety, interpersonal relations, innovation and creativity, efficiency and productivity, and teamwork.

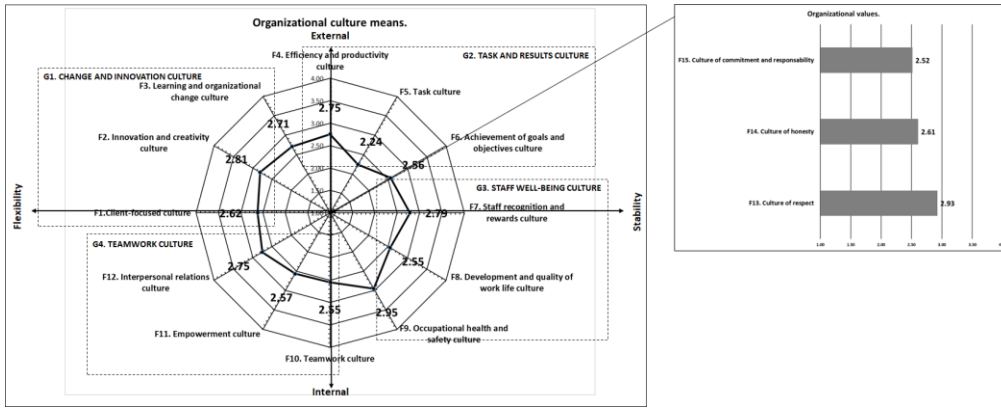

Figure 2. Profile of organizational culture types: descriptive statistics
Source: created by the authors

Comparative profile of organizational culture types

The comparative results of organizational culture types with company type (t student analysis), company size (Anova), and respondents' job level (Anova) are presented below.

Figure 3 shows the significant differences identified in culture and type of organization (public or private). The results indicate that there are significant differences in the client-focused culture, the culture of organizational learning and change, the culture of efficiency and productivity, the culture of achieving goals and objectives, the culture of personnel recognition and reward, the culture of development and quality of work life, the culture of teamwork, the culture of empowerment, the culture of commitment and responsibility, and the culture of honesty.

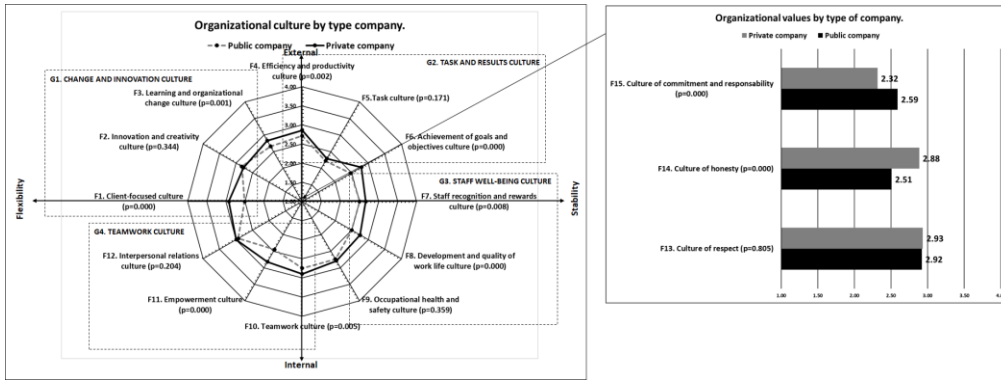

Figure 3. Profile of organizational culture types by company type
Source: created by the authors

Figure 4 presents the results of organizational culture by company size. Significant differences were identified in F1 Culture focused on the client, F5 Task culture, F6 Culture of achieving goals and objectives, F7 Culture of staff recognition and reward, F8 Culture of development and quality of work life, F11 Culture of empowerment, F15 Culture of commitment and responsibility, and F14 Culture of honesty.

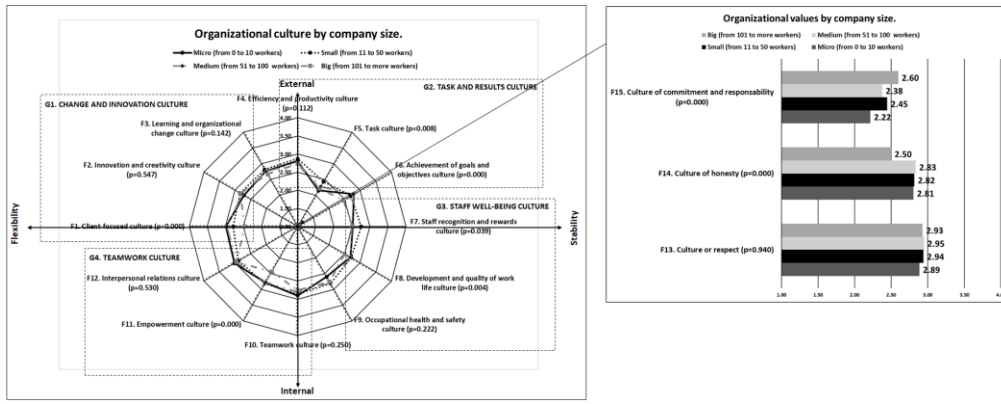

Figure 4. Profile of organizational culture types by company size
Source: created by the authors

Figure 5 presents comparative results of organizational culture by job level. Significant differences exist in the perceived organizational culture, mainly between managers and operational staff. Managers tend to perceive a culture that focuses more on the client, innovation and creativity,

organizational learning and change, efficiency and productivity, achievement of goals and objectives, teamwork, empowerment, staff recognition, occupational health and safety, respect, and honesty.

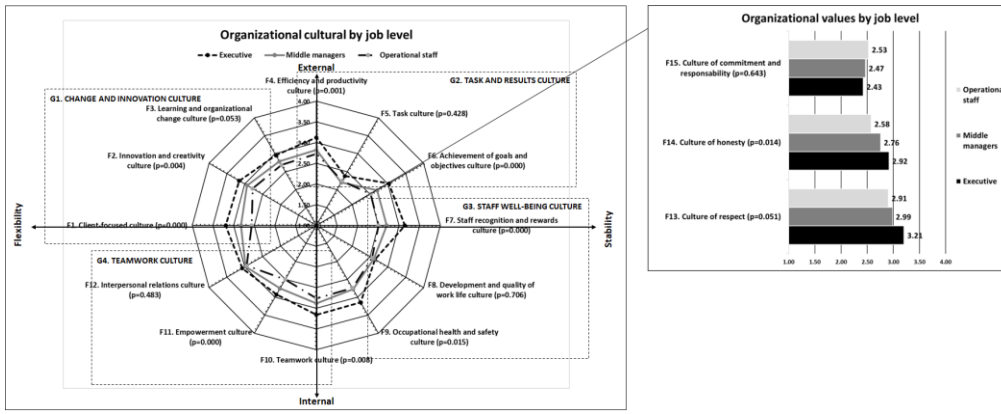

Figure 5. Profile of the types of organizational culture by job level
Source: created by the authors

STOC standardization

In order to enable professionals interested in using the STOC to assess the types of organizational culture, the STOC scoring procedure is outlined below:

1º. Determine the average scores for each factor (types of organizational culture):

- Recode negative items to positive: a) positive items: 1=1; 2=2; 3=3; 4=4. b) negative items: 1=4; 2=3; 3=2; 4=1.
- Add the scores of the items per factor and divide the scores by the number of items of each factor. As a result, the averages of each factor for the sample will be obtained.

2º. Determine the sample Z-scores and the area under the curve.

- Determine the Z-scores with the formula: Z= X-M/S. Where: Z [sample Z values], X [sample factor mean], M [mean of the regulations] and S [standard deviation of the regulations].
- Table 9 shows the M and S values of the regulations obtained in the standardization.
- The Z-value obtained by applying the formula should be consulted in the Z-value table.

3º. Plot the Z-values of the area under the curve at the levels of organizational culture: very strong, strong, moderately strong, moderately weak, weak, and very weak to determine the profile of organizational culture types (Appendix).

Discussion

The results obtained in this research produced a valid and reliable scale to measure the types of organizational culture based on a theoretical model such as the OCI (Cooke & Lafferty, 1987), the OCAI (Cameron & Freeman, 1991), and the Organizational Culture Index by Denison and Neale (1996). The final scale consisted of 92 items, which were in the middle ground with scales such as the OCI by Cooke and Lafferty (1987), which contains 120 items, and the Organizational Culture Survey by Denison and Neale (1996), which has 60 items. As for the number of types of organizational culture, the STOC measures 15 types. Nevertheless, in the literature, few scales measure types of culture, such as the OCAI of Cameron and Freeman (1991) and Cameron and Quinn (1991). Besides being one of the most widely used, this scale has a theoretical model (Competing Values Model). Also, the QIIS of Shortell *et al.* (2000) measures four types of culture. Nonetheless, few instruments measure the types of organizational culture.

Additionally, the STOC presents the results of the standardization of the scale to determine whether the results represent a culture from 'very weak' to 'very strong.' Few measuring instruments offer this feature, and those with it are commercially available.

Conclusions

According to the results obtained in this research, it is concluded that the STOC presents adequate levels of construct validity and reliability. It is a scale that measures 12 types of organizational culture and 3 organizational values to determine the organizational culture profile of the organizations. Once validated, reliable, and standardized, the STOC comprised 92 items. It is also concluded that there are significant differences between the STOC factors with the type of organization, the size of the organization, and the level of position. It is therefore recommended to determine the organizational culture profiles and profiles by type of organization, area, department, type of position, etcetera.

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Annex

STOC Questionnaire V.1.0.

Directions. Please read each statement carefully and answer how much you Agree or Disagree with each one.

Strongly Disagree (TD)	Disagree (D)	Agreed (A)	Strongly Agree (TA)
①	②	③	④

No.	In this organization...	TD	D	A	TA
1.	Staff feel pressured because they have much work to do.	①	②	③	④
2.	I feel pressured to produce results with few resources.	①	②	③	④
3.	Staff feel unable to make decisions autonomously.	①	②	③	④
4.	There is respect among coworkers.	①	②	③	④
5.	I feel happy because I can establish interpersonal relations.	①	②	③	④
6.	I am discouraged that staff are only required to do their jobs.	①	②	③	④
7.	Staff do not strive to meet work objectives and goals.	①	②	③	④
8.	Staff are motivated because they work as a team.	①	②	③	④
9.	I feel disappointed because I have no job development opportunities.	①	②	③	④
10.	Staff feel proud of the recognition they receive from their superiors.	①	②	③	④
11.	The staff act dishonestly.	①	②	③	④
12.	Honesty is not encouraged in this organization.	①	②	③	④
13.	I get stressed because I must fulfill every activity in my job.	①	②	③	④
14.	Staff feel limited in their ability to move up the ladder.	①	②	③	④
15.	It bothers me that the staff are not committed to their work.	①	②	③	④
16.	I feel confident in establishing social relations with my peers.	①	②	③	④
17.	This organization values staff for their achievements.	①	②	③	④
18.	Safe facilities are in place to prevent occupational hazards.	①	②	③	④
19.	In my work, I implement innovative solutions.	①	②	③	④
20.	Staff are not allowed to take initiatives.	①	②	③	④
21.	Staff are satisfied with acquiring new knowledge.	①	②	③	④
22.	Staff achieve objectives by working as a team.	①	②	③	④

23.	This organization promotes the efficient use of resources.	1	2	3	4
24.	In this organization, teamwork is the norm.	1	2	3	4
25.	Staff are dishonest with coworkers.	1	2	3	4
26.	Staff do not have sufficient authority to perform their work.	1	2	3	4
27.	The organization makes changes to achieve objectives.	1	2	3	4
28.	I am concerned that the staff are irresponsible.	1	2	3	4
29.	I feel at ease because the staff are respectful.	1	2	3	4
30.	There is a priority to achieve the objectives by working as a team.	1	2	3	4
31.	I feel protected because the organization has security measures for its workers.	1	2	3	4
32.	I feel frustrated because the goals I have to meet are not clear.	1	2	3	4
33.	There is trust among coworkers.	1	2	3	4
34.	This organization adapts to the requirements of the clients.	1	2	3	4
35.	Teamwork is a priority in this organization.	1	2	3	4
36.	I use the organization's resources efficiently.	1	2	3	4
37.	Staff have no way to move up the ladder.	1	2	3	4
38.	In my job, I cannot meet my personal needs.	1	2	3	4
39.	Staff are not required to achieve results.	1	2	3	4
40.	It makes me angry that my coworkers are irresponsible.	1	2	3	4
41.	Staff are trained to make changes and improvements in the work.	1	2	3	4
42.	Staff do not consider the suggestions of the clients or users.	1	2	3	4
43.	I am frustrated that this organization does not provide me with welfare at work.	1	2	3	4
44.	I feel at ease because there is respect in my work.	1	2	3	4
45.	I feel satisfied because my colleagues respect me.	1	2	3	4
46.	Staff are dissatisfied because they are not being guided to meet goals.	1	2	3	4
47.	Staff are insecure in making decisions in their work.	1	2	3	4
48.	There is respect between managers and staff.	1	2	3	4
49.	The staff work hard to meet productivity goals.	1	2	3	4
50.	In this organization, maximum results are achieved with few resources.	1	2	3	4
51.	This organization rewards productive workers.	1	2	3	4
52.	This organization is not transparent in its actions.	1	2	3	4
53.	Staff feel unable to have control over their work.	1	2	3	4
54.	Staff are stressed because they have to perform many activities.	1	2	3	4
55.	The needs of the clients or users are not met.	1	2	3	4
56.	Staff views are respected.	1	2	3	4
57.	Staff are satisfied because they are provided with job security.	1	2	3	4
58.	I feel motivated because I receive rewards for my work.	1	2	3	4
59.	I am discouraged that the organization does not contribute to satisfying my professional and personal needs.	1	2	3	4
60.	Resources are used without being wasted.	1	2	3	4
61.	There are good relations among the staff.	1	2	3	4
62.	In this organization, change is promoted.	1	2	3	4
63.	It discourages me that I am only supposed to perform my job without being able to relate to others.	1	2	3	4
64.	The staff are not competent to serve clients or users.	1	2	3	4
65.	In my work, I have the support of my colleagues.	1	2	3	4
66.	I feel frustrated because I do not have job promotion opportunities.	1	2	3	4
67.	I feel encouraged because, in this organization, we work as a team.	1	2	3	4

68.	In this organization, a job well done is rewarded.	①	②	③	④
69.	I am indifferent to proposing new work projects.	①	②	③	④
70.	In my work, I am constantly developing new processes.	①	②	③	④
71.	I feel motivated because I can interact with my colleagues.	①	②	③	④
72.	In this organization, the staff are productive.	①	②	③	④
73.	I am dissatisfied because results are not being achieved in this organization.	①	②	③	④
74.	I feel satisfied because my performance is recognized.	①	②	③	④
75.	The staff do not care about meeting the needs of clients or users.	①	②	③	④
76.	I feel dissatisfied because the organization does not provide me with welfare at work.	①	②	③	④
77.	Staff are not interested in working honestly.	①	②	③	④
78.	In my work, I propose new ways to do the job.	①	②	③	④
79.	This organization is concerned about the health and safety of workers.	①	②	③	④
80.	I am concerned that the staff are not committed to the organizational objectives.	①	②	③	④
81.	No career development opportunities are provided to staff.	①	②	③	④
82.	It makes me uncomfortable that this organization only demands to get the job done.	①	②	③	④
83.	The staff do not care about achieving goals.	①	②	③	④
84.	Staff are constantly learning.	①	②	③	④
85.	Staff feel safe because occupational health and safety are promoted.	①	②	③	④
86.	This organization does not act honestly with its staff.	①	②	③	④
87.	In this organization, occupational risks are prevented.	①	②	③	④
88.	Staff lack initiative in their work.	①	②	③	④
89.	I feel motivated because my work is recognized in this organization.	①	②	③	④
90.	Staff perform all work required of them.	①	②	③	④
91.	This job does not let me meet my personal and family needs.	①	②	③	④
92.	The staff are committed to working as a team.	①	②	③	④

Format for charting levels of organizational culture types

Culture type level	Area under the curve	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15
Very strong	47.73 to 50															
Strong	34.14 to 47.72															
Moderately strong	0 to 34.13															
Moderately weak	0 to -34.13															
Weak	-34.14 to -47.72															