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University rankings and influence on performance: comparing perspectives in Chile and Venezuela

Methodology

The research is quantitative, non-experimental with a cross-sectional design. It is a statistical analysis of a survey applied to a sample of 189 officials of different positions in higher education institutions; 41.2 % correspond to Venezuela and 58.8 % to Chile, for a total of 33 institutions between both countries

Objetive

Analyze the perception of experts from universities in Chile and Venezuela, considering nine dimensions and four context variables that use university rankings, and how they perceive their influence on the performance of their universities influence on institutional performance.

Introduction

University rankings is important for different interest groups, so that those in charge of their administration are increasingly aware that these rankings have a growing influence on the image and reputation of the entities they manage. This is observed in aspects such as: strategies, missions, structures, and functions assumed by the universities.

Result or conclusion 1

It was found that there are no significant differences in the dimensions and context variables identified in the research, except for the internationalization dimension, to which the respondents, especially those from Chile, give great importance.

Result or conclusion 2

The infrastructure dimension was highly valued, by the respondents, especially by those belonging to public entities.

Result or conclusion 3

There were no significant differences between the opinions of Chilean and Venezuelan respondents, except for three aspects that were identified as significant in the statistical interpretation: internationalization, infrastructure and territoriality.
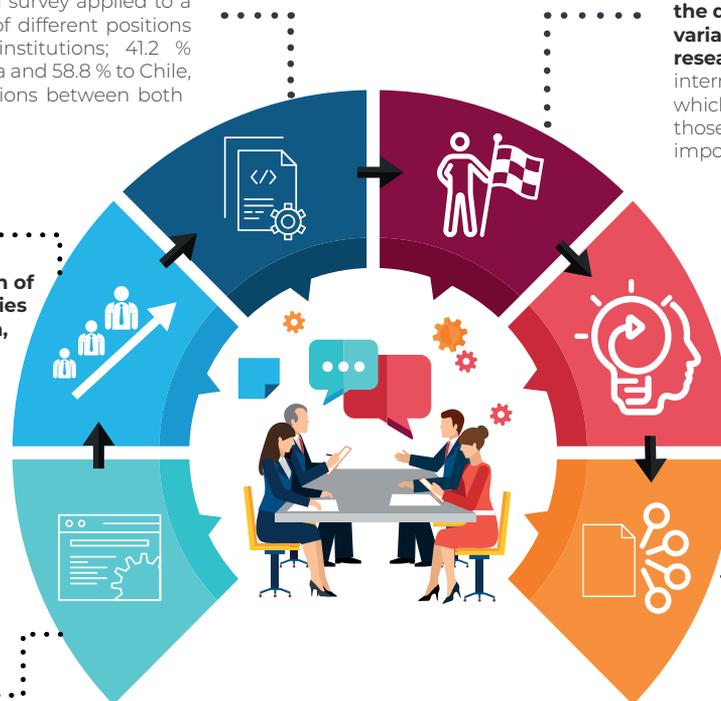
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University rankings and influence on performance: comparing perspectives in Chile and Venezuela

Rankings universitarios e influencia en el desempeño: comparando perspectivas en Chile y Venezuela

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Abstract: university rankings are currently considered a measure of comparing and positioning of institutions, therefore, their study is important. The main objective of this research is to comparatively analyze the perception that experts from universities in Chile and Venezuela have regarding nine dimensions and four context variables that university rankings use, and how they perceive their influence on institutional performance. The methodology consists of the statistical analysis of a survey applied to 189 officials of various positions from higher education institutions, of which 41.2 % correspond to Venezuela and 58.8 % to Chile, who make up a total of 33 institutions between both countries. The results reveal that there are no significant differences in the identified context dimensions and variables, except in the internationalization dimension from the perspective of comparison between countries; secondly, in infrastructure from the perspective of the public and private spheres. Regarding the context variables, territoriality turned out to be the most significant in relation to the condition of seniority in the institution. It is concluded that these three identified aspects constitute critical success factors to be promoted in the strategic plans of the institutions, in accordance with the particular conditions of each institution.

Keywords: management, university governance, competence, evaluation, organization, research, university, academia.

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Resumen: los rankings de universidades son considerados en la actualidad una medida de comparación y posicionamiento entre instituciones, por lo que su estudio suscita un gran interés. El objetivo principal de esta investigación es analizar comparativamente la percepción que tienen las personas expertas de las universidades de Chile y Venezuela, con respecto a nueve dimensiones y cuatro variables de contexto que utilizan los rankings de universidades, y cómo perciben su influencia en el desempeño institucional. La metodología consiste en el análisis estadístico de una encuesta aplicada a 189 funcionarios de diversos cargos provenientes de instituciones de educación superior, de los cuales el 41,2 % corresponden a Venezuela y el 58,8 % a Chile, quienes integran un total de 33 instituciones entre ambos países. Los resultados revelan que en líneas generales no existen diferencias significativas en las dimensiones y variables de contexto identificadas, a excepción de la dimensión de internacionalización desde la perspectiva de comparación entre países; en segundo lugar, la infraestructura desde la mirada de la esfera de lo público y lo privado. En cuanto a las variables de contexto, la territorialidad resultó ser la más significativa en relación con la condición de antigüedad en la institución. Se concluye que estos tres aspectos identificados constituyen factores críticos de éxito a promover en los planes estratégicos de las instituciones, de acuerdo con las condiciones particulares de cada institución.

Palabras clave: gerencia, gobernanza universitaria, competencia, evaluación, organización, investigación, universidad, academia.

Introduction

Studying university rankings is important to the area of management, as the influence it has on aspects such as strategies, missions, structures and functions of universities is increasingly evident (Veliz and Marshal, 2022; Katsumoto *et al.,* 2022). Several studies show how rankings represent input information for quality in the process of evaluation and positioning of universities in the context of an academic evaluation market that establishes differences in status, reputation of universities and their members, while promoting internationalization (McAleer *et al.,* 2019; Xi and Rowlands, 2021; Artyukhov *et al.,*2021; Lee *et al.*, 2021; Fernandes *et al.*, 2022a).

In this sense, institutions with excellent ratings in these evaluations are preferred by national and international students, favoring collaboration (Jeyaraj *et al.*, 2021, and Soysal *et al.*, 2022). In this way, it qualifies the information provided by the rankings as essential, useful and independent (Ramírez *et al.*, 2019), which allows decision makers to compare their institutions with respect to others, identifying strengths and weaknesses. It is important to consider that the use of rankings has been questioned as a criterion for quality assessment, because they present methodological deficiencies (Serra *et al.*, 2021; Moskovkin *et al.*, 2022), such as the use of soft data such as reputation surveys and the presence of structural biases that affect results of universities from diversified territorial and educational contexts in a non-ho-mogeneous way (Marginson and Van-der-Wende, 2007; Williams and Van-Dyke, 2008; Calderón and Franca, 2018; Krauskopf, 2021; Bellantuono *et al.,* 2022; Wut *et al.*, 2022).

When analyzing the results of the rankings, it is necessary to keep in mind the methodology, indicators and their weightings (García and Pita, 2018). Despite some theoretical and technical criticisms, academics largely recognize the influence of university ranking positions on the preferences of funders, academics and students, nationally and internationally (Uslu, 2020).

Regarding the dimensions and indicators of university rankings, there are various researches indicating the importance of certain categories within the overall measurement system (Çakır *et al.,* 2015; Olcay and Bulu, 2017; Vernon *et al.,* 2018; Lukić and Tumbas, 2019; Iordache-Platis and Papuc, 2019; Kosztyán *et al.,* 2019; Uslu, 2020). These researches agree in confirming that the rankings offer greater weight to certain indicators. The most significant number of global ranking systems predominantly focus in the context of measuring research performance as the crucial indicator of university quality and competitiveness, followed by reputation category indicators, teaching quality and web performance, in some cases. This is evidenced by looking at the indicators of some of the most recognized global rankings such as: Shanghai Academic Ranking of World Universities (ARWU), World University Rank (THE), Quacquarelli Symonds (QS) University Ranking, and Scimago Country Rank (Table 1).

Table 1

Main evaluation criteria of Global university rankings

Shanghai Academic Ranking of World Universities (ARWU)		Thimes Higher Education World University Rank (THE)		Quacquarelli Symonds (QS) World University Rank		Scimago Country Rank	
Criteria	Weight	Criteria	Weight	Criteria	Weight	Criteria	Weight
Quality of teaching	10 %	Teaching	30 %	Industry revenues	50 %	Research	50 %
Quality of teaching staff	20 %	Citations	30 %	Teaching quality	20 %	Innovation	30 %
Research production	40 %	Industry revenues	2,5 %	Employability	20 %	Social impact	20 %
Per capita yield	10 %	International perspectives	7,5 %	Internationalization	10 %		

Note. Prepared by the authors based on the methodology of each ranking.

Dogan and Al (2019) point out that despite the diversity of criteria in the rankings, comparison across rankings can be useful primarily for ranking bodies, politicians, and decision makers to review which indicators to use in their rankings and to question whether it is necessary to continue with general rankings. This is a challenging process given the complexities and specificities of institutions, which require, as Dixon and Hood (2016) point out, an evaluation system capable of distinguishing the performance of institutions, that is also stable enough to identify changes in performance over time, and that avoids perversities derived by the strategic responses of institutions. This effort could be complemented with those raised by the UNE-ISO 21. 001:2018, which establishes the basis of a management system for educational organizations, with emphasis on the students and all the actors of the educational system.

On the other hand, the global prestige of rankings and the aspiration for continuous improvement in rankings has helped to foster a research culture and provide more investment to develop this activity (Jeyaraj *et al.,* 2021; Wandercil *et al.,* 2021). From a stakeholder perspective, the ranking shows the position or academic perception of quality of a focal university in relation to competing universities (Sukoco *et al*., 2021; Fernandes *et al*., 2022b). Thus, the growing influence of global rankings increases competitiveness among universities worldwide with substantial government support, as the world-class status of institutions also represents the prestige of the country (Hazelkorn 2011; Sanz-Casado *et al.,* 2013; Bak and Kim, 2015; Hubbard *et al*., 2021; Singh and Singh, 2021).

Studies conducted in various realities in the context of university education show the impact of these classifiers. Dowsett (2020) in a study conducted in Australian universities reveals that specific changes in strategic direction not only improve the market position of a university, but can also contribute to a significant increase in its ranking. This impact goes beyond universities to be part of countries' development strategies. Another example are the studies by Lee *et al*. (2020) and Shreeve (2020) on financing initiatives on the Asian continent to make institutions globally recognized. In Latin America, the work developed by King-Domínguez *et al.* (2018), Ganga-Contreras *et al.* (2020; 2021), Ortiz *et al.* (2021) and from the perspective of academics, the work of Suárez-Amaya *et al.* (2021) also stand out, providing background in the region.

Hence, the aim of this paper is to comparatively analyze the perception that experts from universities in Chile and Venezuela have in relation to dimensions and variables that are part of the indicators used by university rankings.

In order to achieve the objectives, a quantitative, non-experimental research with a transversal

design is carried out. The data are obtained applying a questionnaire to an intentional non-probabilistic sample, which is composed of 189 officials of different positions from different higher education institutions (in total 33), of which 41.2 % correspond to Venezuela and 58.8 % to Chile.

Among the most significant results, the enormous importance given to the internationalization dimension stands out, especially from the point of view of the Chilean respondents; something similar occurs with the infrastructure dimension, which is highly weighted by public universities, which usually present weaknesses in this aspect, particularly those located in regions.

Materials and Method

This is a quantitative, non-experimental research with a cross-sectional design. In the context of the study, the sample is constituted by 189 officials of different positions from institutions of higher education, of which 41.2 % correspond to Venezuela and 58.8 % to Chile. The sample is a non-probabilistic purposive sample. The number of institutions involved in the study was 33, between the two countries.

In relation to the information collection instrument, it first included seven questions to characterize the respondents, which included: university / institution to which the respondent belongs (1) country; (2) position in the university / institution; (3) years working in the university / institution; (4) age range; (5) sex; (6) and studies (7). For questions (3) and (4), the variables for data analysis were organized into the following categories:

- Regarding years of university work, the data were grouped into: months working, between 1 to 5 years, between 6 to 15 years, between 16 to 25 years and more than 26 years in the institution.

- For the variable positions, the data were distributed in: senior manager, director, head of unit, researcher, academic, administrative professional and other.

Secondly, 13 questions were incorporated with Likert measurement response alternatives, all of which addressed the perception of the performance indexes in the constitution of the rankings to classify higher education institutions.

The first section is composed of nine dimensions: infrastructure (1), research (2), community outreach (3), internationalization (4), perception of quality (5), academic body characteristics (6), student characteristics (7), university / institutional management (8) and university governance (9), where each subject responded with a value from 1 to 5, considering 1 as not very important and 5 as very important for each dimension.

In the third part, the subjects responded with the same evaluation from 1 to 5, but in reference to four context variables: territoriality (1), size of the university (2), budget (3) and concentration of other university centers (4), in terms of level of importance. In addition, in the second part, a question was asked in which the respondents had to distribute in percentage the values they would assign in a ranking of university performance to the nine dimensions previously mentioned.

The Statistical Package for the Social Sciences (SPSS) 25.0 for Windows was used for analyzing the data. In order to verify whether or not the sample scores follow a normal distribution, the nonparametric Kolmogorov-Smirnov test for normality was performed, where p-values <.05 were obtained in all dimensions, so nonparametric inferential statistics were used. Descriptive statistics such as frequency tables, means and standard deviations were also used.

In relation to inferential statistics, the Mann-Whitney U test was used to compare the means of the dimensions by country and by type of institution. In addition, the means of the scores were compared by position and by range of years working in the institution with the Kruskall-Wallis test. Values p<.05 were considered significant.

Results

Characteristics of respondents

In relation to the respondents, the age section was categorized into four groups. The first considers those under 35 years of age with 9.1 % of the subjects; then, between 36 to 45 years of age with 31.6 %; between 46 to 60 years of age with 48.1 % and over 60 years of age with 11.2 %. In this regard, a mean of 2.61 was identified, with a standard deviation of ±0.804. In relation to gender, the results showed 52.4 % of women and the remaining percentage of men.

Another variable analyzed was the type of institution according to the origin of ownership to which the respondents belong. In this regard, it was evident that most are from public entities (85%) and the remaining percentage from private universities. In this sense, it is worth noting that the people who answered the survey have been working in their respective universities for some time. In this way, only 11 % of the subjects had been working for months, while 20.3 % of them indicated that they had been working between 1 to 5 years, 25.1 % between 6 to 15 years, 32.6 % between 16 to 25 years and only 11.2 % had been working for more than 26 years in the institution. The relative frequency in relation to the amount of time the subjects have been working in each institution is distributed in the categories of only months, 1 to 5 years, 6 to 15 years, 16 to 25 years and 36 years or more; 57.8% of the cases were in the categories of 6 to 15 years and 16 to 25 years.

As for the types of positions, they are divided into seven categories (senior management, director, head of unit, researcher, academic, administrative professional and other) and only academics represent 52.4 % of the data. On the other hand, the ages were organized into four categories, which are: under 35 years old, between 36 to 45 years old, between 46 to 60 years old and over 60 years old. The options between 36 to 45 years old and between 46 to 60 years old account for 79.7 % of the cases.

Dimensions of the rankings

In relation to the Mann Whitney U test in the comparison of means among the nine dimensions in the case of sex, values were obtained in: infrastructure ($p=.815$), research ($p=.674$), community outreach ($p=.715$), internationalization ($p=.917$), perception of quality ($p=.172$), academic body characteristics ($p=7.03$), student characteristics ($p=.393$), university/institutional management ($p=.660$) and form of university governance ($p=.166$). Therefore, no statistically significant differences were found.

It can be seen in Table 2 that the situation is similar in the comparison by country, except in the internationalization dimension ($p=.049$) with significant differences, i.e., for respondents from Chilean universities the internationalization criterion has more weight than the rest of the dimensions presented.

Table 2

Comparison of dimensions by country

Dimensions	Chile	Venezuela	p Value
Infrastructure: square meters constructed, existence of laboratories, libraries, student facilities, etc.	4.39±0.779	4.55±0.777	0.085
Research: production of indexed papers by areas of knowledge, competitive funds obtained, etc.	4.57±0.656	4.56±0.819	0.513
Community outreach: relationship, programs or initiatives generated by the university in its relationship with the surrounding communities, such as: community service and impact evaluations.	4.39±0.847	4.35±0.839	0.627
Internationalization agreements with other institutions outside the country, exchange of students and professors and scholarships.	4.39±0.830	4.21±0.767	0.049

Perception of quality: consultations with the relevant actors in the university's environment (collaborators, partnership, companies, etc.) regarding their perception of the university's value at the local level.	3.90±1.058	4.01±1.118	0.301
Characteristics of the academic body: distribution of doctors and masters of the university. As well as the effective hours they participate in the university.	4.64±0.660	4.64±0.626	0.927
Student characteristics: entrance scores or other qualifying variables of students entering the university.	3.57±1.088	3.70±1.089	0.406
Institutional management: regimes of university governance, forms of election of the rector and the highest collegiate bodies, etc.	4.19±0.943	4.16±1.001	0.942
Form of institutional governance: empowerment of stakeholders, forms of election of authorities, organizational structure, etc.	4.15±1.006	4.03±1.076	0.447

Note. Prepared by the authors based on the results of the survey.

In the case of the comparison by type of institution, Table 3 shows significant differences in the infrastructure dimension between public and private institutions (p=.001), in which it can be interpreted that the physical spaces and level of equipment in universities is another indicator that is considered important to improve institutional performance, mainly for public institutions.

Table 3
Comparison of dimensions by type of institution

Dimensions	Public	Private	p Value
Infrastructure	4.54±0.691	3.96±1.036	0.001
Research	4.54±0.761	4.71±0.460	0.487
Community outreach	4.33±0.869	4.61±0.629	0.137
Internationalization	4.30±0.816	4.21±0.686	0.375
Quality perception	3.98±1.052	3.75±1.236	0.406
Characteristics of the academic staff	4.62±0.663	4.71±0.535	0.606
Student characteristics	3.64±1.121	3.54±0.881	0.408
Institution management	4.16±0.967	4.25±0.967	0.580
Institutional form of government	4.08±1.049	4.21±0.957	0.557

Note. Prepared by the authors based on the results of the survey.

On the other hand, the Kruskall Wallis test for comparing the ninth dimensions by years of seniority working in the institution showed no significant differences in infrastructure (p=.202), research (p=.638), community outreach (p=.496), internationalization (p=.880), perception of quality (p=.999), academic staff (p=.775), student characteristics (p=.819), management of the institution (p=.947) and institutional governance (p=.516). Regarding the differences by positions according to dimension (p=.357; p=.527; p=.676; p=.271; p=.241; p=.568; p=.987; p=.852 and p=.789), no statistically significant differences were found, showing that regardless of the time working in the institution and the position held by the subjects, the perception of the weight assigned to these dimensions are statistically equal.

About context variables

For the comparison of means, the Mann Whitney U test was used for the four context variables by sex and the following results were found: territoriality (p= .067), size of the university (p= .183), budget (p= .931) and concentration of other university centers (p=.685). The same situation by country (p=.692; p=.638; p=.050 and p=.182) and by type of institution (p=.332; p=.736; p=.426 and p=.759) in terms of the level of importance of these variables. Consequently, no statistically significant differences were found by sex, country and type of institution in the level of importance of the context variables that influence the performance indexes of the universities.

The Kruskall-Wallis test was performed to compare the context variables with the years of seniority working in the institution, which yielded significant differences in the context variable "territoriality" (p=.041), while no significant differences were found in the other three variables. For the context variable territoriality, Mann Whitney U test was performed for the number of peers with Bonferroni correction, where significant differences were obtained (p=.003) between the subjects who have months working in the institution and those who have been working between 6 to 15 years. Therefore, it is interesting to understand that the level of importance on the geographical location and demographic characteristics of the area where the university is located according to the perception of the peers mentioned above are high, mainly for those who are starting in the academic world. For the rest of the experts, the analysis does not show significant differences.

Table 4

Comparison of the four context variables with the years working in the institution

Context variable	Only months	From 1 to 5 years	From 6 to 15 years	From 16 to 25 years	26 or older	P Value
Territoriality	4.60±0.940	4.21±0.905	3.94±1.030	4.21±1.035	4.05±1.24	0.041
Size	3.90±1.071	3.84±1.079	3.89±1.184	3.69±1.272	3.57±1.568	0.937
Budget	4.60±0.681	4.58±0.642	4.62±0.677	4.49±0.960	4.71±0.561	0.928
Concentration	3.45±1.234	3.58±1.056	3.57±1.281	3.85±0.980	4.05±1.203	0.223

Note. Prepared by the authors based on the results of the survey.

Regarding the comparison of the four context variables with the positions, values were found (p=.268; p=.363; p=.271 and p=.120); therefore, there are no significant differences in relation to the level of importance in the variables that affect the components and dimensions with which the performance indexes of the universities are constructed according to the positions of the subjects, i.e., they are statistically equal.

Discussion and conclusions

This research shows in the literature review that universities in the current era are highly influenced by the measurement criteria established by the global rankings, and this is not alien to the daily life of the people who work and study at universities. In practice, this research proposed to compare experts located in universities in Chile and Venezuela with respect to the dimensions and variables presented by the rankings and how these have influenced institutional performance. In a preliminary diagnosis, the hypothesis was that the results would be dissimilar given the contrast of economic and social contexts surrounding the higher education system in Chile and Venezuela; however, this is not the case, given that in general terms no significant differences were observed, i.e. the weight given by people to the dimensions and variables analyzed in this study is similar, except in three aspects that were identified as significant in the statistical interpre-

tation: internationalization, infrastructure and territoriality.

In the case of internationalization, this appears as a dimension with an important weight, mainly for Chile. These results are consistent with those obtained by McAleer *et al.* (2019) who say internationalization is statistically significant in explaining the rankings of all universities, even when private and non-private universities are analyzed.

Another noteworthy fact in this study is the weight given to the infrastructure dimension, which seems to be related with more weight in public universities, which is consistent with the limitations traditionally presented by this type of institutions.

It is worth highlighting the message -which impacts both topics- from the research carried out by Xi and Rowlands (2021) on the reality of the process in regional universities, mainly regarding the attraction of foreign students, given that an adequate infrastructure is crucial when it comes to developing a strategy oriented to internationalization.

The above is related to a context variable that is territoriality. Universities seem to be immersed in a dilemma between giving importance to local needs, but without being left out of the international market, and the research conducted by Suárez-Amaya *et al.* (2021) reflects this reality. In the results obtained in this research, the inclination towards the issue of territoriality is from people with less seniority in the position; it would be interesting to deepen on the analysis to identify in depth the reasons that explain these derivations.

Finally, the results of this research will serve as a reference for decision-makers, since these allow to identify, from the perspective of university stakeholders, critical success factors to be promoted in the strategic plans of the institutions, in accordance with their conditions.

Acknowledgments

References

Artyukhov, A., Dluhopolskyi O., Vasylieva, T., Lyeonov, S., Dluhopolska, T. and Tsikh H. (2021). Local (University) Rankings and quality of education: identification of publication activity indicators. *2021 11th International Conference on Advanced Computer Information Technologies (ACIT)*, 246-249. https://doi.org/10.1109/ACIT52158.2021.9548380

Bak, H. J. and Kim, D. H. (2015). Too much emphasis on research? An empirical examination of the relationship between research and teaching in multitasking environments. *Research in Higher Education, 56*(8), 843-860. https://link.springer.com/article/10.1007/s11162-015-9372-0

Bellantuono, L., Monaco, A., Amoroso, N., Aquaro, V., Bardoscia, M., Loiotile, A. D., Lombardi, A., Tangaro, S. and Bellotti, R. (2022). Territorial bias in university rankings: a complex network approach. *Scientific reports, 12*(1), 4995. https://doi.org/10.1038/s41598-022-08859-w

Çakır, M.P., Acartürk, C., Alaşehir, O. and Çilingir, C. (2015). A comparative analysis of global and national university ranking systems. *Scientometrics, 103*(3), 813-848. https://doi.org/10.1007/s11192-015-1586-6

Calderón, A. I. and Franca, C. M. (2018). Rankings acadêmicos na educação superior: tendências da literatura ibero-americana. *Revista da Avaliação da Educação Superior, 23*(2), 448-466. https://doi.org/10.1590/s1414-40772018000200010

Dixon, R. and Hood, Ch. (2016). Ranking academic research performance: a recipe for success. *Sociologie du Travail, 58*(4), 403-411. https://doi.org/10.1016/j.soctra.2016.09.020

Dogan G. and Al, U. (2019). Is it possible to rank universities using fewer indicators? A study on five international university rankings. *Aslib Journal of Information Management, 71*(1), 18-37. https://doi.org/10.1108/AJIM-05-2018-0118

Dowsett, L. (2020). Global university rankings and strategic planning: a case study of Australian institutional performance. *Journal of Higher Education Policy and Management, 42*(4), 478-494. https://doi.org/10.1080/1360080X.2019.1701853

Fernandes, A., Shukla, B. and Fardoun, H. (2022a). Fostering reputation of higher education institutions in international ranking by means of diversity of international collaboration. *Information Sciences Letters, 11*(4), 1137-1143. https://doi.org/10.18576/isl/110416

Fernandes, A., Shukla, B. and Fardoun, H. (2022b). Indian higher education in world university

rankings-the importance of reputation and branding. *Journal of Statistics Applications & Probability*, *11*(2), 673-681. https://doi.org/10.18576/jsap/110224

Ganga-Contreras, F, Sáez, W. Calderón, A. and Rodríguez-Ponce, E. (2020). Principales rankings académicos internacionales: el caso de Chile. *Revista Ensaio*, *28*(107), 407-434. https://doi.org/10.1590/S0104-40362019002701964

Ganga-Contreras, F. Calderón A., Saez, W. and Wandercil M. (2021). Evolución de las universidades chilenas en los rankings académicos nacionales. *Revista Venezolana de Gerencia*, *26*(96), 1125-1153. https://doi.org/10.52080/rvgluz.26.96.9

García de Fanelli, A. and Pita Carranza, M. (2018). Los rankings y sus usos en la gobernanza universitaria. *Revista Iberoamericana de Ciencia, Tecnología y Sociedad* – CTS, *13*(37), 95-112. https://repositorio.cedes.org/bitstream/123456789/4484/1/52-173-1-PB.pdf

Hazelkorn, E. (2011). *Rankings and the reshaping of higher education: the battle for world-class excellence*. Springer.

Hubbard, K., O'Neill, M. and Nattrass, S. (2021). Levelling the playing field: The effect of including widening participation in university league tables. *International Review of Education*, *67*, 273-304. https://doi.org/10.1007/s11159-020-09864-9

Iordache-Platis, M. and Papuc, R. (2019). Comparative study of academic leadership solutions for civic engagement: Role of research strategy and academic rankings. *Proceedings of the 15th European Conference on Management, Leadership and Governance* (ECMLG 2019), 252-261. https://doi.org/ 10.34190/MLG.19.097

Jeyaraj, J., Wald, N. and Harland, T. (2021). Higher education teachers' experiences of becoming research active: striving for university status in the Global South. *Asia Pacific Education Review*, *22*(3), 417-425. https://doi.org/10.1007/s12564-021-09688-8

Katsumoto, S., Nakahara, L. and Bowman, N. A. (2022). The introduction of the Times Higher Education Japan university rankings and changes in institutional admissions outcomes. *Compare: A Journal of Comparative and International Education*, 1-17. https://doi.org/10.1080/03057925.2022.2093161

King-Domínguez, A., Llinas-Audet, X. and Améstica, L. (2019). Rankings universitarios como medida de calidad: análisis comparado en Latinoamérica. *Revista Venezolana de Gerencia*, *23*(1), 218-237. https://doi.org/10.37960/revista.v23i1.24465

Kosztyán, Z. Banász, Z., Csányi, V. and Telcs, A. (2019). Rankings or leagues or rankings on leagues? - Ranking in fair reference groups. *Tertiary Education and Management*, *25*(4), 289-310. https://doi.org/10.1007/s11233-019-09028-x

Krauskopf, E. (2021). The Shanghai global ranking of academic subjects: room for improvement. *Profesional de la información*, *30*(4). https://doi.org/10.3145/epi.2021.jul.08

Lee, J., Liu K. and Wu Y. (2020). Does the Asian catch-up model of world-class universities work? Revisiting the zero-sum game of global university rankings and government policies. *Educational Research for Policy and Practice*, *19*(3), 319-343. https://doi.org/10.1007/s10671-020-09261-x

Lee, S. J., Schneijderberg, C., Kim, Y. and Steinhardt, I. (2021). Have academics' citation patterns changed in response to the rise of world university rankings? a test using first-citation speeds. *Sustainability*, *13*(17), 9515. https://doi.org/10.3390/su13179515

Lukić, N. and Tumbas, P. (2019). Indicators of global university rankings: The theoretical issues. *Strategic Management*, *24*(3), 43-54. https://doi.org/10.5937/StraMan1903043L

Marginson, S. and Van-der-Wende, M. (2007). To rank or to be ranked: The impact of global rankings in higher Education. *Journal of Studies in International Education*, *11*(3/4), 306-329. https://doi.org/10.1177/1028315307303544

McAleer, M., Nakamura, T. and Watkins, C. (2019). Size, internationalization, and university rankings: evaluating and predicting Times Higher Education (THE) Data for Japan. *Sustainability*, *11*(5), 1366. https://doi.org/10.3390/su11051366

Moskovkin, V. M., Zhang, H., Sadovski, M. V. and Serkina, O. V. (2022). Comprehensive quantitative analysis of TOP-100s of ARWU, QS and THE World University Rankings for 2014–2018. *Education for Information*, *38*(2), 133-169. https://doi.org/10.3233/EFI-211539

Olcay, G.A. and Bulu, M. (2017). Is measuring the knowledge creation of universities possible?: A review of university rankings. *Technological Forecasting and Social Change*, *123*, 153-160. https://doi.org/10.1016/j.techfore.2016.03.029

Ortiz, R., Rivero, J. and Bajo, E. (2021). Calidad y rankings universitarios globales: Una mirada desde América Latina. *Universidad y Sociedad*, *13*(6), 421-434. https://rus.ucf.edu.cu/index.php/rus/article/view/2405

Ramírez, Z., Barrachina, M. and Ripoll, M. (2019). Divulgación de rankings universitarios y eficiencia en educación superior: Análisis bibliométrico y sistémico. *Revista de Educación,* (384), 255-297. https://doi.org/10.4438/1988-592X-RE-2019-384-412

Sanz-Casado, E., García-Zorita, C., Serrano-López, A., Efraín-García, P. and De Filippo, D. (2013). Rankings nacionales elaborados a partir de múltiples indicadores frente a los de índices sintéticos. *Revista Española de Documentación Científica, 36*(3), e012. https://doi.org/10.3989/redc.2013.3.1.023

Serra, R., Alfonso, D., Pierra, A., León, O. and García, J. L. (2021). Gestión de rankings internacionales en universidades cubanas: experiencias de la Universidad Tecnológica de La Habana. *Universidad y Sociedad*, *13*(5), 27-39. https://rus.ucf.edu.cu/index.php/rus/article/view/2208

Shreeve, R. (2020). Globalisation or westernisation? The influence of global university rankings in the context of the Republic of China (Taiwan). *Compare: A Journal of Comparative and International Education, 50*(6), 922-927. https://doi.org/10.1080/03057925.2020.1736403

Singh, S. and Singh A. (2021). Importance of perception as a parameter in university rankings: a critical evaluation. *Prabandhan: Indian Journal of Management*, *14*(11), 25-40. https://doi.org/10.17010/pijom/2021/v14i11/166979

Soysal, Y., Baltaru, R. y Cebolla-Boado, H. (2022). Meritocracy or reputation? The role of rankings in the sorting of international students across universities. *Globalisation, Societies and Education.* https://doi.org/10.1080/14767724.2022.2070131

Suárez-Amaya, W., Ganga-Contreras, F., Barrios E., Pereira, M. y Villegas-Villegas, F. (2021). Perspectiva de los académicos venezolanos respecto de los rankings universitarios. *Interciencia*, *46*(2), 72-78.

Sukoco, B., Mudzakkir, M., Ubaidi, A., Nasih, M., Dipojono, H., Ekowati, D. y Tjahjadi, B. (2021). Stakeholder pressure to obtain world-class status among Indonesian universities. *Higher Education*, 82, 561-581. https://doi.org/10.1007/s10734-020-00667-3

Uslu, B. (2020). A path for ranking success: what does the expanded indicator-set of international university rankings suggest? *Higher Education*, *80*(5) 949-972. https://doi.org/10.1007/s10734-020-00527-0

Veliz, D. and Marshall, P. (2021). Influence of global rankings on strategic planning from the perspective of decision-makers: A case study of a Chilean research university. *Higher Education Quarterly, 76*(3), 638-652. https://doi.org/10.1111/hequ.12333

Vernon, M. M., Andrew, B. E. and Momani, S. (2018). Are university rankings useful to improve research? A systematic review. *PLoS ONE*, *13*(3), e0193762. https://doi.org/10.1371/journal.pone.0193762

Wandercil, M., Calderón, A. I. y Ganga-Contreras, F. A. (2021). Governança universitária e rankings acadêmicos à luz da literatura acadêmica brasileira. *Roteiro*, *46*, e22391. https://doi.org/10.18593/r.v46i.22391

Williams, R. and Van-Dyke, N. (2008). Reputation and reality: Ranking major disciplines in Australian universities. *Higher Education*, *56*(1), 1-28. https://doi.org/10.1007/s10734-007-9086-0

Wut, T.-M., Xu, J. y Lee, S. W. (2022). Does University Ranking Matter? Choosing a University in the Digital Era. *Education Sciences*, *12*(4), 229. http://dx.doi.org/10.3390/educsci12040229

Xi, X. and Rowlands, K., (2021). An ignored player in internationalisation: why and how does a Chinese regional university internationalise? *Journal of Higher Education Policy and Management, 43*(6), 625-638. https://doi.org/10.1080/1360080X.2021.1899559

Retos
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Social return and quality of HEI: wage effect on small firms

Methodology
The estimates analyzed state differences in HEI quality, considering the QS university ranking and the Government Quality and Business Productivity surveys. The percentage of workers with higher education and salaries were used to calculate the social return.

Objective
Measure the social return of higher education, estimating the effect on the salaries of management and operational personnel, associated with the work of university students hired in small and medium-sized companies.

Introduction
The social return of higher education is a benefit that non-college graduates gain from interacting with college graduates; the interaction of workers with different skills creates learning opportunities and increases productivity.

Result and conclusion 1
Small and medium-sized companies with universities in the top 150 of the QS ranking benefit from higher salaries for their operational staff.

Result and conclusion 2
It was estimated that a worker would earn a higher salary between 11 % and 19 %, in states with universities in the top 150 of the QS ranking, and there would also be an increasing salary as the percentage of university students increases.

Result and conclusion 3
A positive social return was observed when increasing the percentage of university students in the companies. When considering the quality of the HEIs, the social return is higher in the institutions where their public universities are placed in better positions within the ranking.

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Social return and quality of HEI: wage effect on small firms

Retorno social y calidad de las IES: el efecto salarial en pequeñas empresas

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Abstract: providing an education with the highest quality possible, making efficient use of resources, is a permanent demand for publicly funded universities. It is known that university graduates receive a private benefit (wage), although estimates of the social benefit of higher education are still lacking, i.e., the positive effects that university students create in other workers. In this regard, the aim of this paper is to measure the social return of higher education, estimating the effect on the wage of managers and workers, associated with the job of university graduates hired in small and medium-sized companies. The analysis was carried out with data from Mexico, combining official figures from the Government Quality Survey, which reports satisfaction with university education, and the Productivity Survey, which describes wages and schooling, among others. The sample was formed with small and medium enterprises. The abundant information available allowed us to use instrumental variables and a two-stage regression. It was confirmed that tertiary education has a positive social effect and that this effect is greater in regions with higher quality HEIs. By broadening the perspective towards the quality of HEIs and social return, universities can demonstrate that their impact exceeds their graduates, reaching workers without university studies through a positive salary effect.

Keywords: wage, universities, managers, QS, SME, 2SLS, INEGI, Mexico.

Resumen: brindar una educación de la mayor calidad posible, haciendo un uso eficiente de los recursos, es una exigencia permanente para las universidades con financiamiento público. Aunque es conocido que los egresados con estudios universitarios reciben un beneficio privado (salarial), todavía faltan estimaciones del beneficio social de la educación superior, es decir, de los efectos positivos que los universitarios crean en otros trabajadores. En este contexto, el objetivo de este artículo es medir el retorno social de la educación superior, estimando el efecto sobre el salario del personal directivo y operativo, asociado al trabajo de universitarios contratados en pequeñas y medianas empresas. El análisis se realizó con datos de México, se combinaron cifras oficiales de la Encuesta de Calidad de Gobierno, que reporta la satisfacción de la educación universitaria, y la Encuesta de Productividad, que describe salarios y escolaridad, entre otros. La muestra se enfocó en pequeñas y medianas empresas. La abundante información disponible permitió utilizar variables instrumentales y una regresión en dos etapas. Se corroboró que la educación universitaria tiene un efecto social positivo y que este efecto es mayor en las regiones con las Instituciones de Educación Superior (IES) de mayor calidad. Al ampliar la perspectiva hacia la calidad de las IES y el retorno social, las universidades pueden demostrar que su impacto sobrepasa al conjunto de egresados y provoca un efecto salarial positivo en trabajadores sin estudios universitarios.

Palabras clave: salario, universidades, gerentes, QS, PYME, MC2E, INEGI, México.

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Introduction

Higher education has made significant progress in all countries, especially in developing economies. Two cases with great expansion are Spain and South Korea, where in 2020 the percentage of young people (24-34 years old) with university education is 50 % and 70 %, respectively, very high rates compared to previous generations, for example, in the 55-64 age group (30 % and 26 %, respectively). In Latin America, there were low rates of people with university education, with an average rate of 16 % in the 55-64 age group. As time passed by, schooling increased and, currently, around 30 % of young people in countries such as Chile, Colombia and Mexico have completed higher education. In Brazil, the percentage is close to 24 %, and in Argentina 13 % (OECD, 2022). In 15 Latin American countries, ECLAC has documented that the vast majority of university graduates are employed in sectors with medium or high productivity (2021, pp. 92-94). It is known that university workers earn higher incomes. Analytically, this private return to education has been studied using the well-known Mincer equation (Urzúa, 2017; López-Acevedo, 2004).

Literature is new about the performance of universities. It was in the 1980s when university rankings and intra and inter-country comparisons began, partly led by private universities (Balán, 2012). In the 2010s, surveys that measure the quality of governments started which, among other aspects, includes the evaluation of public education, both at its basic and higher levels (Charron *et al.*, 2019). In Mexico, the government quality survey (ENCIG) is biannual and has been conducted six times (2011-2021). In this article, the quality of public higher education will be studied and the information from the ENCIG will be complemented with one of the most well-known university rankings (QS, 2020). In Latin America, a common goal is to expand the coverage of higher education and achieve international standards in teaching, research and outreach. As long as there is a low percentage of university students, especially in the most precarious regions, it is difficult to socialize the benefits of higher education (Corak, 2013) and the potential decreases due to the lack of sufficient people and technological capabilities to move towards a knowledge-based economy.

The social return of higher education

This article estimates the social return of higher education, which consists of the benefit of people without university studies when interacting with university graduates, for example, when working in the same company. According to Moretti (2004a, p.179; 2004b, p. 660), this human capital externality hypothesis has been around since the time of classical economists, which enables that the interaction of workers with different skills creates learning opportunities and higher productivity. There would be other explanations as to why productivity increases when workers with university education increase, in one case -external pressure- states that as there are more university students, the pressure on less qualified workers to achieve higher productivity increases and, in another -complementary skills- both types of workers (with high and low schooling) complement each other and build better work routines.

If there is evidence of social return, this would reduce questions that public investment to universities is fiscally regressive, because those benefits are captured by the upper strata, those enrolled in universities (Carnoy, 2020; CONEVAL, 2018, pp. 82-84; Keller, 2010). The case study is Mexico, a country where about five million people pursue higher education studies in some public institution annually (ENCIG, 2013-2019). The educational offer is made up of public and private institutions of varying sizes. Of this group, 20 public universities are ranked among the 200 most important universities in Latin America (QS, 2020). This territorial dispersion, as well as membership in the QS ranking, was used in the analysis to estimate the effect of higher education on wages.

The evidence confirms that higher wages are paid in companies in a higher percentage of workers with higher education. In particular, it was estimated that an increase of 10 percentage points (p.p.) in the percentage of university graduates increases the salaries of operational workers by 9.4 % and the salaries of management

personnel by 11.9 %. It was also confirmed that in the regions with universities in the top 150, companies pay higher salaries between 10 % and 20 % compared to the rest of the country. These findings are important because they show that the benefits of public investment in HEIs do not only occur in their own community. Through the companies, these benefits are distributed beyond the university students, and should be part of the calculation of the various positive effects with which universities contribute socially.

Several authors have studied the economic effects of higher education in Latin America. Manacorda *et al.* (2010) report the percentage wage return in five countries, for those with tertiary education and their share in total employment. The effect of university education has also been studied (Brambilla *et al.*, 2012) more broadly, assuming that there is a reward for acquired skills (skill premium). Other analyses (Aboal and Veneri, 2016; García, 2020) show that graduates of higher education -university and technological institutions- are more likely to become entrepreneurs, whether part-time or full-time.

Governance and the third mission of HEIs

Higher Education Institutions (HEIs) are required, especially those that receive public funding, to provide quality education for their students, but also to give back to their communities with specialized knowledge and services (Ireland, 2015). In that sense, universities are demanded to be spaces of interaction with other members of their region. In this regard, this third mission is an increasingly visible aspect with the cooperation flows between HEIs and companies.

Universities expanded significantly during the 20th century, after World War II, due to the belief that higher education institutions were essential for economic and social progress because (Summers, 2011; Holmes and Mayhew, 2016): they provide qualified personnel, who are providers of innovation, and contribute to shaping democratic institutions and values. Valero and Van Reenen (2019) conclude that a 10 % increase in the number of universities in a region is

associated with 0.4 % more GDP per capita and detect that capital cities have a higher per capita growth compared to the rest of the regions. They also found that the effect of universities is heterogeneous in time and space. For example, they identified that there is a catch-up effect when new universities are installed in the lagging regions of a country. In the United States, France, Germany and the United Kingdom, universities have had a positive economic impact for decades. In other countries, such as those in Asia, this positive experience began belatedly after 1990 (Valero and Van Reenen, 2019).

For universities to enhance their positive outcomes, governance that includes accountability but also autonomy is required (Bruckman and Carvalho, 2014; Pandey, 2004). Universities became key players because the advent of a knowledge-based economy coincided with a social demand for greater transparency. In this context, the concept of the third mission of universities gained popularity, links with companies and non-academic institutions intensified (Abreu *et al.*, 2016; Peña-Vinces and Urbano, 2014); these links served to share knowledge, to carry out technology transfer, to create leadership in entrepreneurial and creative thinking, all favoring innovation and economic development.

It is important to differentiate the features of universities, which, in their simplest version, are divided into two groups: teaching-based HEIs and research-based HEIs. Both types of universities contribute to business development and increase regional productivity (Abreu *et al.*, 2016). First, teaching-focused HEIs focus on facilitating an entrepreneurial context, generating productive leadership, capacity building and networking. Second, research-focused HEIs specialize in innovative knowledge exchange. A common approach is to state that teaching-based HEIs had a stronger link at the local and regional level, while research-focused HEIs played a more active role at the national and international level, but this distinction has been changing.

It is important to highlight the benefits of education-based HEIs, since these institutions are more business-oriented and some are anchors of technological clusters, and in addition to tra-

ining specialized personnel, they also promote entrepreneurial culture and practices. This would explain why it has been found that companies that are closer to universities have better management practices (Valero and Van Reenen, 2019).

Institutions and local development

Local economic development is related to government performance and the quality of institutions. Therefore, to explain the differences in the economic trajectories of regions, it is possible to find part of the answer in their institutions (Rodríguez-Pose and Di Cataldo, 2015). The quality of institutions provides the type of incentives and constraints that affect the decisions of economic actors. To the extent that incentives and long-term strategies are in place, government effectiveness facilitates the transmission of knowledge, promotes investments in desired areas, and allows regional actors to maximize their technological capacity (Kahn and MacGarvie, 2016).

In turn, institutions define the way in which collective decisions are made, and they also support the formation of mutual trust and the control of corruption, affecting the degree of uncertainty faced by society. Specifically, Rodríguez-Pose and Di Cataldo (2015) identify that government effectiveness is related with principles of social equity and quality public services, such as education and health. Using regions in Europe, Rodríguez-Pose and Di Cataldo (2015) compared central and peripheral regions, where the former had higher government quality indexes and the latter showed governments with lower quality and also a relatively higher social lag. The authors found that a small improvement in government effectiveness and control of corruption has substantial benefits in peripheral regions in both innovation and knowledge generation.

This evidence shows that the central regions, unlike the peripheral ones, have benefited the quality of their institutions and have built learning and knowledge spaces in an environment of regional innovation systems. Conceptually, a similar discussion has been raised for the United States by Brint and Clotfelter (2016) and for Europe by Holmes and Mayhew (2016). Based on those findings, this article studies the Mexican case focusing on regional differences in the quality of public higher education. It was chosen to observe the wage effect on small and medium-sized enterprises. The mechanism analyzed was the social return of higher education and smaller firms were chosen, since their hired personnel come mostly from the same region. In this way, it is partially controlled that the wage effect measured corresponds to the educational institution of the region itself.

Materials and methods

The purpose of the article is to estimate the positive effect of public higher education on wages. The estimation strategy consisted of analyzing state differences in the quality of higher education institutions (HEIs).

Quality of public higher education

Two sources of information were combined to measure the quality of HEIs: i) the QS ranking of universities, prepared by Quacquarelli Symonds, a company specialized in higher education, and ii) the governmental quality and impact survey (ENCIG-INEGI), which evaluates the satisfaction of higher education users, among other services (Monsiváis, 2019). A more detailed assessment of the quality of higher education was applied by Bernate *et al*. (2020). Map 1 shows the nine states with the best evaluated universities (tier-1) in the top 100 in Latin America, except for the states of Veracruz and Querétaro that rank near 140th place. In another block (tier-2), eight states with the next best evaluated universities were assigned in the range of 150-200 positions in Latin America. In a preliminary version, a third tier included seven states with universities that rank near the 250th position. However, statistical tests showed no differences between these tier-3 states and the other states. For this reason, the analysis was limited to three comparison groups: tier-1, tier-2 and without-tier, the third group includes states without universities rank by QS or ranked

outside the top 200. To validate the consistency between the QS ranking and the response of users of public university education, the percentage of overall satisfaction of the government quality survey (ENCIG, 2013-2021) and by each characteristic of higher education was compared.

Map 1

Mexico. Territorial distribution of tier-1 and tier-2 universities
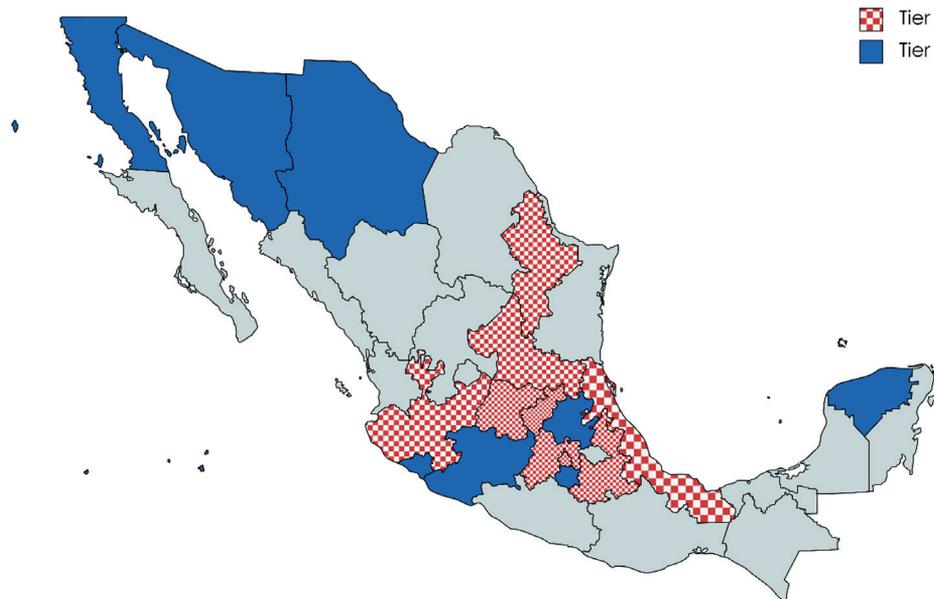
Note. The map shows that Tier-1 universities are located in the central part of the territory, Tier-2 universities are dispersed in three regions: the northern border with the United States, the central region, next to the Tier-1s, and in the southeast. Own elaboration with data from QS Universities Rankings, 2019 and 2020.

Consistency was found in the broadest item -satisfaction with higher education- and positive evidence in the analysis by characteristic. Figure 1 shows a 4 p.p. advantage of higher satisfaction in tier-1 states over non-tier states. Although there is also greater tier-2 satisfaction (vs. no-tier), that small advantage is insufficient to detect statistically. The specific aspects that produce greater satisfaction in the tier-1 states consist of three characteristics: having adequate facilities and furniture in good condition, and users report satisfaction with both the syllabus and the days of classes scheduled in the calendar. It is strange that the users of the tier-1 universities do not report high satisfaction where it would have been expected: the capacity of the professors and the quality of education. Despite this difference, it is confirmed that the states previously classified

as tier-1 have supremacy in the national higher education system.

The second group of interest are the states with tier-2 universities; in the ranking this group is somewhat distant from the leaders, although within the top 200 universities in Latin America. Users in these states report high satisfaction with the capacity of the professors, even higher than in tier-1, and also report satisfaction with the fulfillment of the syllabus. The high performance in only two of the eight characteristics was insufficient to be able to statistically affirm that in tier-2 states there is greater overall satisfaction compared to non-tier states. Finally, other characteristics appear to be common or shared across regions and universities, namely: cleanliness of facilities, faculty profile, and number of students per class.

These findings provide the necessary evidence to validate that differences in the quality of public higher education can be captured through the groupings of states into three clusters. In the next section, we describe the wage data with which the effect of higher education will be analyzed.

Figure 1

Mexico. Percentage of satisfaction with public university education

Note. The following analysis is restricted to 2015-2017, a vertical line was added in 2018 to narrow that period. Own elaboration with data from ENCIG-INEGI and QS World Universities Rankings.

Wages and social return

Wages were chosen to study the social effect of higher education. The estimation strategy used is mainly based on Moretti (2004a). Like Moretti, the percentage of workers with higher education (hereafter, percentage of university students) was used as a key variable, although it was additionally proposed that the effect of university students on wages intensifies as the quality of university education increases. The hypothesis of education quality as an interaction is supported by the European experience (Rodríguez-Pose and Di Cataldo, 2015). In particular, the governance of public higher education institutions can be conceptualized as part of the performance of existing institutions in a region. Although university education contributes to raising wages in all states of a country, this effect should be greater in those states where the quality of their institutions, particularly public higher education institutions, is higher.

The objective is to measure the social return of higher education, unlike most research that focuses on the private return. To illustrate the difference, Figure 2 was prepared. The private return to higher education consists of quantifying the level of income that university graduates achieve for themselves. In this case, the social return was estimated, i.e., the benefit for different types of workers when interacting in companies, for which the salary effect achieved by operating personnel (mostly non-university graduates) and managers or supervisors (mostly university graduates) was estimated. Figure 2 also shows, on the left side, the potential effect of HEIs in companies, called the third mission (Abreu *et al.*, 2016; Zamora-Sánchez *et al.*, 2022). Thus, the estimation seeks to measure the social return and, additionally, to test whether the quality of HEIs has an impact on the rate of return.

The variables used will be described in the following paragraphs and then the characteristics of the estimation will be detailed. The two explanatory variables used are the quality of public higher education and the percentage of university students. The quality variable is described in the previous section and was implemented through a dichotomous variable to show three groups of states, those with tier-1, tier-2 and no-tier institutions. The quality of HEIs should have a positive impact on firms, which would be observed through higher social return and higher wages in tier-1 and tier-2 states. The other explanatory variable is the percentage of university graduates (undergraduate, engineering, specialty and graduate), which was obtained by dividing the number of workers with higher education by the total number of workers (×100). An increase in the percentage of college graduates is expected to induce a higher overall wage, because of greater labor interaction.

Figure 2

Social return estimation strategy
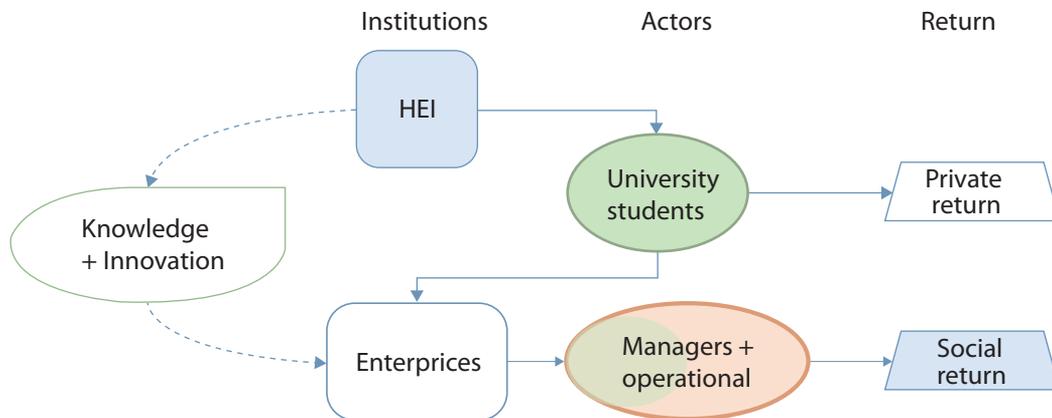
Note. R. is the abbreviation for return. Own elaboration based on Moretti (2004a) and Abreu *et al.* (2016). This figure shows that Higher Education Institutions (HEIs) interact with firms through two channels: a) university graduates who will work as managers or operational personnel; the green subset - ellipse below - represents the low percentage of university graduates, and b) the transfer of knowledge or innovations is a second channel of interaction.

The Productivity Survey of Micro, Small and Medium Enterprises (ENAPROCE) published by the National Institute of Statistics of Mexico was used as a source of information, which collects information at the firm level. This feature is relevant, since it directly provides both the salary and the percentage of university students, as well as the industry, company size, etc. Usually, in order to know the number of people with higher education, administrative records or household surveys are used and, based on these data, the percentage of university students is imputed with great inaccuracy to business statistics. The need to impute the number of workers with higher education. is eliminated by using ENAPROCE.

Combining the two editions of ENAPROCE 2015 and 2018, data were obtained for 2015, 2016 and 2017, as the second edition published data for two years. With this, a panel was prepared with peer observations by sector and state. The survey is conducted by design only in strategic sectors and its breakdown by state is limited to small and medium-sized enterprises (SMEs). On average, a state has seven strategic sectors (≡6 615); therefore, the constructed data panel has a total of 635 observations (=3 years ×32 states ×6 615 sectors).

The criterion used in the survey to define a SME was to have a minimum of 11 employees in any sector and a maximum of 100 employees

in commerce or services and 250 employees in manufacturing. In addition, INEGI used sales volume as an additional criterion to stratify company size (INEGI, 2019). In the sample, 26 % of the workers have university studies and in some sectors that percentage reaches 46 %, for example, in Business Support Services, Pharmaceutical Products or Research and Technological Development Services. A challenge of the research is to test whether the quality of the HEI has a positive impact on the effect of university graduates on wages. Since only the percentage of university graduates is known, with no information on the HEI in which they studied, then it must be assumed that most workers graduated from a university in the same state in which they work. This assumption is restrictive, but realistic since, compared to large companies, SMEs have a lower percentage of immigrant workers.

The social return will be measured with the salary of two types of workers. The salary was obtained by dividing the annual salary by the employed personnel. The two types of workers are: a) Managerial and supervisory (university education), and b) Operational and support (mostly non-university) (INEGI, 2019, p. 74), the former perform executive, planning and inspection work performed by operational staff, and the latter perform production, sales and service work. This excludes personnel who worked only for fees or commissions without receiving a base salary. By having two types of workers, it is possible to compare whether there are different effects associated with the percentage of university students.

It is complicated to measure analytically the effect of university students on wages, since both variables are intermingled. Consequently, the estimation strategy consists of using instrumental variables that allow us to obtain information related to the percentage of university students, uncorrelated with wages. In Moretti (2004a), the proportion of young people in total employment is proposed as an instrument; the rationale of this instrument is that each generation increases the percentage of people with university studies. In this sense, there would be a positive relationship between a higher proportion of young workers (under 29 years of age) and a higher percentage of university graduates in employment.

Control variables and fixed effects were also included in the estimation, and all the information came from the ENAPROCE. The fixed and time effects were included as dichotomous variables for each industry and year. In the control variables were used: (1) firm size (employees per firm), since wages are higher in larger scale firms, (2) working hours (hours per week), since a higher number of working hours is usually related to a higher wage, (3) female managers (percentage of women in managerial positions), to take into account the wage disparity between men and women, especially in managerial positions, and (4) span of control (operating personnel among managers) shows the number of operating personnel under the responsibility of each manager or supervisor; this variable would provide additional information on the characteristics of the industries and their effect on wages.

The model

The variables described in the previous section allow to study how a higher rate of university graduates differentially affects the wages of two different groups of workers (Managerial and Operational), the former with university education and the latter with people without university education. The following equation predicts the (logarithm) wage of a group of workers i in a state-industry pair s in a year t

$$(1)\ \log(w_{ist}) = \alpha_0 + \alpha_1 H_{st} + \delta Z_{st} + t + u_{ist}$$

where $i =$1 Managerial,2 Operational, s corresponds to the various combinations of the 32 states × 17 industries, t=2015,2016,2017, H is the percentage of university workers, Z is a vector of industry characteristics, and u is the residual of the equation capturing unobserved components of workers and sectors across states; these residuals are assumed to be identically and independently distributed.

Figure 3
Mexico: Salaries in SMEs
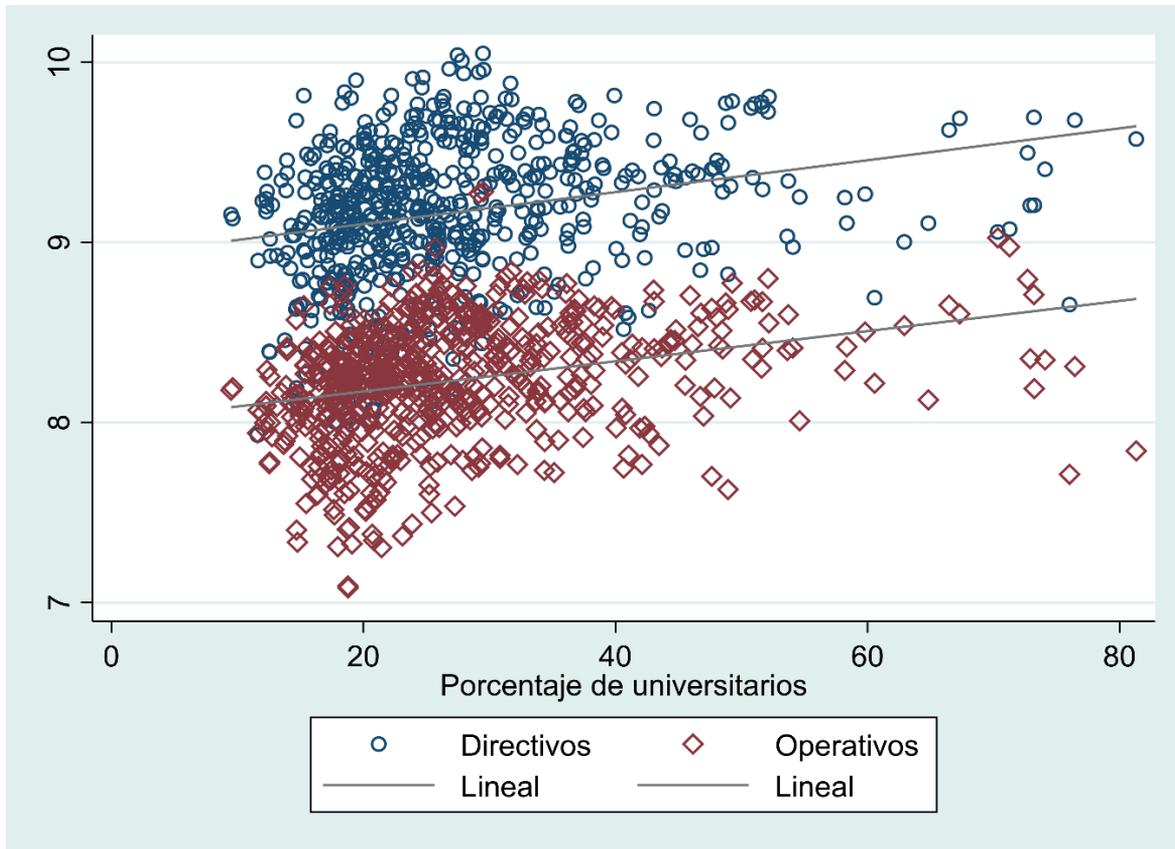
Note. Salary in logarithmic scale. SMEs: Small and Medium-Sized Enterprises. An increase in the percentage of workers with higher education is associated with higher managerial and operational wages. Each observation represents a state-industry pair, 2015-2017. Both linear trends have R^2 of 0.74. ENAPROCE-INEGI.

The coefficient of interest is α_1 which estimates the percentage effect of university students on wages, α_1 is expected to be positive. The observations in the model are grouped by state and the control variables seek to isolate the percentage effect of university students in order to correctly estimate its effect on wages. Alternatively, two terms were included to the equation to contrast the effect of the quality of higher education on social return

$$(2)\ \log(w_{ist}) = \beta_0 + \beta_1 H_{st} + \beta_2 Q_{st} + \beta_3 (H_{st} \times Q_{st}) + \gamma Z_{st} + t + \epsilon_{ist}$$

where Q_{st} is a dichotomous variable indicating the perceived quality of higher education and has

associated parameters β_2 and β_3. The first term, β_2 is expected to be positive, since it is an effect of the quality of institutions on salary. The second term, β_3 measures a joint effect, as a result of the interaction between educational quality and the percentage of university students.

Figure 3 shows the dispersion of salaries for the two groups of workers with different percentages of university students. Management salaries are distributed in the upper part of the graph, although there is a small area of overlap with the salary of operatives that could be due to regional and sectoral salary differences. A regression line is also shown for each group of workers. In general, it is observed that wages are increa-

sing with a higher increase in the percentage of university students. A slight difference can be seen in the slopes, with the slope being slightly higher for managers, i.e., managers would have a greater wage increase when the percentage of university graduates in their company increases. The following section presents the results of the estimations proposed in equations 1 and 2 that evaluate the social return of public higher education and the effect of the quality of public institutions.

Results

The findings enable to affirm that the average salary in small and medium-sized companies is related both to the percentage of workers with university studies and to the quality of the public higher education institution (HEI) in the region. Therefore, the higher the percentage of university graduates in the companies, the higher the salary and, at the same time, the higher the salaries of managers and operatives in states with universities classified in the QS ranking (tier-1 or tier-2), compared to salaries in states without public universities in the QS Latin American ranking.

Using ordinary least squares (OLS), with no interactions or control variables, salaries are approximately 20 % higher in states with tier-2 universities and between 20 % and 30 % higher in states with tier-1 universities compared to states with universities outside the QS ranking. It was also found that a 10 percentage point (p.p.)

increase in the percentage of undergraduates would increase salaries by 9.5 % for management staff and 9.7% for operational staff.[1]

When including the four control variables (section 2.2), a significant reduction was observed in the percentage effect on salary of university students, from 9.5 % to 6.5 % and 8.3 % respectively for operational and managerial personnel, for every 10 p.p. increase in the number of university students. Likewise, there was a decrease in the effect of the quality of public higher education institutions on salaries. Nevertheless, these estimated coefficients continue to indicate that an increase in the percentage of university graduates in the companies would be related with a higher salary, and a worker could obtain an additional salary increase of between 10 % and 20 % depending on the quality or ranking of the state university.

Preliminary estimates are consistent in the presence of time effects, industries, firm size, etc. Even so, there would be unobservable characteristics that could simultaneously affect the wage and the percentage of college students. To prevent possible biases in the estimation, two-stage regression was employed using instrumental variables. This consisted in the first stage, in instrumenting (predicting) the percentage of university students using both the percentage of young people (under 29 years old) with employment (ENOE-INEGI) and using fixed effects by industry and, in the second stage, this instrument is used to explain the wage.

---

1   Since the model specification is $\log(w) = \beta_0 + \beta_1 H$, if increasing H by one unit the result could be denoted as $\log(w') = \beta_0 + \beta_1(H + 1)$. The increment would be $\log(w') - \log(w) = \beta_1$ o $e^{\beta_1} = w'/w$. The rate of change $\left((w'/w)\text{-}1\right) \times 100 = \left(e^{\beta_1}\text{-}1\right) \times 100$, is the percentage change in w associated with a unit increase in H. For simplicity, the coefficients were reported for a 10 p.p. increase.

Table 1
Social return: the effect of the percentage of university students on salaries

	Least Squares in two stages			
	No interations		With interactions	
	[1] Operational	[2] Managers	[3] Operational	[4] Managers
Percentage of university students	.0094***	.0119***	.0067***	.0068***
	(4.5e-04)	(4.4e-04)	(.0013)	(.0012)
Tier-1	.113***	.187***	--	--
	(.023)	(.0266)		
Tier-2	.124***	.131***	--	--
	(.0416)	(.036)		
Tier-1 X Porc university students	--	--	.0031***	.0061***
			(.001)	(.0012)
Tier-2 X Porc university students	--	--	.0033*	.0037*
			(.002)	(.0017)
Constant	8.64***	9.09***	8.72***	9.24***
	(.0763)	(.0885)	(.0686)	(.0776)
Control variables	Sí	Sí	Sí	Sí
Temporary effects	Sí	Sí	Sí	Sí
Statistics F	1400.94	1516.42	1371.77	1435.98
R^2-adjust (centered)	0.693	0.645	0.694	0.644
ECM Root	0.170	0.218	0.170	0.218
Under-identification (p value)	29.45 (0.031)	29.45 (0.031)	27.70 (0.049)	27.70 (0.049)
Overidentification (p value)	24.02 (0.089)	21.33 (0.167)	24.61 (0.077)	20.67 (0.192)
*** p<.01, ** p<.05, * p<.1				

Note. Standard errors in parentheses. MSE is Mean Square Error. Each regression had 635 observations (state-industry pairs).
Own elaboration with data from ENAPROCE-INEGI.

Figure 4

Wages and the estimated effect of educational quality and percentage of university students

a) Managers **b) Operational**
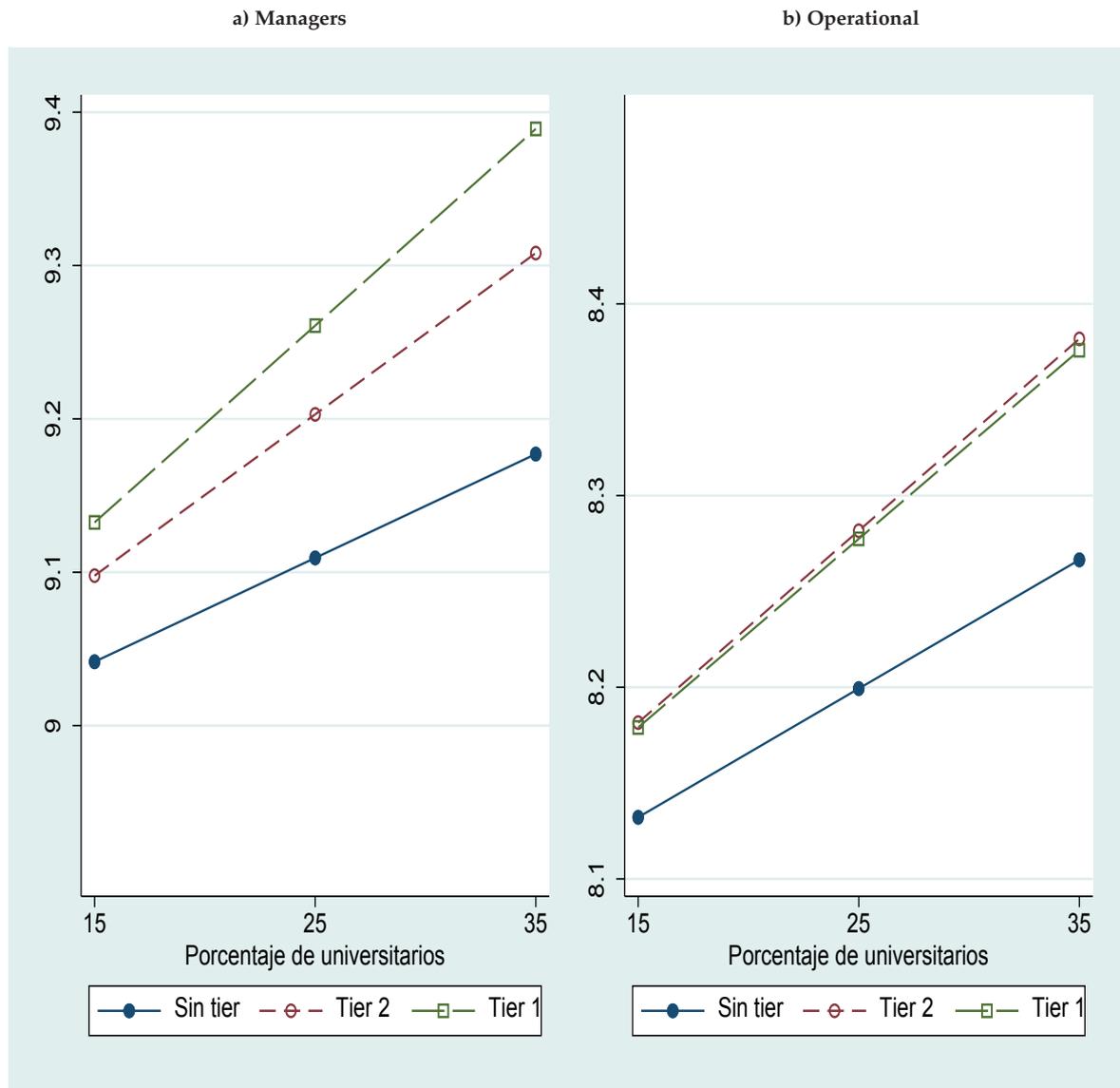
The two-stage estimation with instrumental variables is relevant because, unlike schooling, age composition (the percentage of young people) is a more exogenous variable and allows to better predict the real effect on wages. In this sense, age composition is unlikely to affect wages through channels other than worker attributes and, at the same time, most people have practically completed their years of formal schooling before the age of 29. The estimated two-stage coefficients are

shown in Table 1 columns [1] to [4]; the first pair excluding interaction effects and the second pair reporting interactions between the percentage of university students and the quality of public higher education. The conventional case without interactions corresponds to [1] and [2] which is consistent with the results already described, where a worker is expected to obtain a higher wage between 11 % and 19 %, in states with universities within the ranking (tier-1 and tier-2),

and there would also be an increasing wage as the percentage of university students increases.

The preferred result contains interactions between the percentage of university students and educational quality (columns [3] and [4]). Graphically, these results are presented in Figure 4. In the case of managers (Figure 4a), the estimates show that the salary increases with higher educational quality and also with a higher percentage of university students. The vertical shifts indicate that, on average, a manager in a tier-1 or tier-2 state would have a higher salary, 18.7 % and 13.1 %, respectively compared to if it were in a state where no university is in the QS ranking. It should be noted that the difference between 18.7 % and 13.1 % is statistically significant.

Regarding the operational personnel, Figure 4b only reveals two groups of states, those that have a university in some tier (tier-1 or tier-2) and those states with non-tier universities. As with managers, for operational, educational quality translates into higher salaries, but there is a greater 'salary compression' limited to two groups, and not three, as is the case with managers. In addition to the benefit of having a higher salary for residing in a state with a university on the tier, there is the additional benefit of a greater social return on education. Note in Figure 4b that the slope in tier states is higher than in non-tier states, 9.8 % and 6.7 %, respectively as the percentage of university graduates increases. Firms in states with universities in the top 150 manage to benefit from a higher salary for their operating personnel. Quantitatively, when the percentage of university students is 15 % (left side, Figure 4b) the wage gap is 7.7 % between a tier-1 vs. a non-tier state. As the percentage of university students increases to 35 %, the wage gap increases to 13 % (right side, Figure 4b).

Discussion and conclusions

Using data from small and medium-sized companies in Mexico, there is evidence of a social return from higher education. Specifically, the higher the percentage of university-educated workers and the higher the quality of public HEIs, the higher the salary of management and operational per-

sonnel, where managers are mostly university graduates, although there is also a benefit for operational personnel, mostly non-university graduates. These findings show that HEIs provide a service to the community beyond their facilities and the training they provide to their students. Acemoglu and Angrist (2000) discuss the difference between private and social returns to education. Subsequently, Moretti (2004a) presents estimates of the social return that show that the wages of workers with secondary education and those with higher education increase with more university students in firms,

The analysis also revealed that there is a positive social return, i.e., a generalized increase in salary when the percentage of university students increases. Excluding the quality of education, a similar effect on salary was found for management and operational personnel. On the other hand, when taking into account the quality of the dominant public university in each region, different dynamics were observed with a greater social return found in regions with HEIs ranked in the top 150 Latin American universities. Future research could compare the results of Mexico with the realities of Brazil, Chile or Colombia, countries that have multiple universities outside the national capital in the QS ranking, most of them in the top 150.

The impact of institutions and differentiated benefits across regions has been studied by Rodríguez-Pose and Di Cataldo (2015), who report that central and peripheral regions are defined, to some extent, by the quality of their institutions, including educational ones. The wide coverage of statistics on the quality of local institutions provides a useful input for further research, for example, on citizenship or on business performance.

The private return of education is well known in Latin America; the results extend this knowledge by reporting a social return of higher education. Therefore, contrary to what is usually estimated, a greater efficiency of the public budget for HEIs should be recognized, since in addition to the private return, the social return should be taken into account. A usual criticism of the universities' budget is that it caters to the high-income population (Carnoy, 2020; CONEVAL, 2018)

and that higher salaries for schooling and skills increase the social inequality gap (Brambilla *et al.*, 2012; Keller, 2010). When analyzing the effect of the quality of education and its effect on social return, it was possible to verify that there are potential conditions for social equalization (Corak, 2013; Esquivel, 2011) and that the current inequality that is criticized arises from the centralization of resources in a few cities. Thus, there could be a decrease in income inequality to the extent that educational quality and coverage can grow in more regions of the country.

It was found that the quality of higher education and workers with university studies create a social return, measured by the generalized increase in salaries in companies. These results allow to reevaluate both the role of Higher Education Institutions and the efficiency of the public budget for universities, as well as to justify the budget and review the allocation criteria by region. An instrumental variables method was used to efficiently estimate the effect of university students. In the future, an exhaustive analysis is still needed to verify the causality between HEI activities and social return.

References

Aboal, D. and Veneri, F. (2016). Entrepreneurs in Latin America. *Small Business Economics*, *46*(3), 503-525. https://doi.org/10.1007/s11187-015-9696-3

Abreu, M., Demirel, P., Grinevich, V. and Karataş-Özkan, M. (2016). Entrepreneurial practices in research-intensive and teaching-led universities. *Small business economics*, *47*(3), 695-717. https://doi.org/10.1007/s11187-016-9754-5

Acemoglu, D. and Angrist, J. (2000). How large are human-capital externalities? Evidence from compulsory schooling laws. *NBER Macroeconomics Annual*, *15*, 9-59. https://doi.org/10.1086/654403

Balán, J. (2012). *Research Universities in Latin America: the challenges of growth and institutional diversity*, 741-770. https://doi.org/10.1353/sor.2012.0036

Bernate, J. A., Guataquira Romero, A., Romero Melo, E. N. and Reyes Escobar, P. C. (2020). Satisfacción de la Calidad Educativa en Educación Superior. *Podium*, *38*, 37-50. https://doi.org/10.31095/podium.2020.38.3

Brambilla, I., Dix-Carneiro, R., Lederman, D. and Porto, G. (2012). Skills, exports, and the wages of seven million Latin American workers. *The World Bank Economic Review*, *26*(1), 34-60. https://doi.org/10.1093/wber/lhr020

Brint, S. and Clotfelter, C. T. (2016). US higher education effectiveness. *The Russell Sage Foundation Journal of the Social Sciences*, *2*(1), 2-37. https://doi.org/10.7758/rsf.2016.2.1.01

Bruckmann, S. and Carvalho, T. (2014). The reform process of Portuguese higher education institutions: from collegial to managerial governance. *Tertiary Education and Management*, *20*(3), 193-206. https://doi.org/10.1080/13583883.2014.911950

Carnoy, M. (2011). As higher education expands, is it contributing to greater inequality? *National Institute Economic Review*, *215*, R34-R47. https://doi.org/10.1177/0027950111401142

Charron, N., Lapuente, V. and Annoni, P. (2019). Measuring quality of government in EU regions across space and time. *Papers in Regional Science*, *98*(5), 1925-1953. https://doi.org/10.1111/pirs.12437

Comisión Económica para América Latina -CEPAL- (2021). Panorama Social de América Latina 2020. CEPAL. Santiago de Chile. https://bit.ly/3AtLUzZ

Consejo Nacional para la Evaluación de la Política de Desarrollo Social -CONEVAL- (2018). *Estudio diagnóstico del derecho a la educación 2018*. CONEVAL. https://bit.ly/3OMUUEA

Corak, M. (2013). Income inequality, equality of opportunity, and intergenerational mobility. *Journal of Economic Perspectives*, *27*(3), 79-102. https://doi.org/10.1257/jep.27.3.79

Esquivel, G. and Cruces, G. (2011). The dynamics of income inequality in Mexico since NAFTA. *Economía*, *12*(1), 155-188. https://doi.org/10.1353/eco.2011.0009

García Hernández, Y., García Rojas, J. A., Ramírez Sabino, A. I. and Amador Martínez, M. L. (2020). Formación académica e iniciativa emprendedora de los estudiantes de educación superior tecnológica. *Podium*, *38*, 123-138. https://doi.org/10.31095/podium.2020.38.8

Holmes, C. and Mayhew, K. (2016). The economics of higher education. *Oxford Review of Economic Policy*, *32*(4), 475-496. https://doi.org/10.1093/oxrep/grw031

Hudson, C. (2006). Regional development partnerships in Sweden: A way for higher education institutions to develop their role in the processes of regional governance? *Higher Education*, *51*, 387-410. https://doi.org/10.1007/s10734-004-6416-3

Instituto Nacional de Estadística y Geografía –INEGI– (2019). Encuesta Nacional sobre Productividad y Competitividad de las micro, pequeñas y medianas Empresas 2018. ENAPROCE. Síntesis metodológica. Aguascalientes. México. https://bit.ly/3yGU5Yk

Instituto Nacional de Estadística y Geografía –INEGI– (varios años). Encuesta Nacional de Calidad e Impacto Gubernamental –ENCIG–, INEGI. https://bit.ly/3bQx3Fk

Instituto Nacional de Estadística y Geografía –INEGI– (varios años). Encuesta Nacional de Ocupación y Empleo –ENOE–, INEGI. https://bit.ly/3ahRzy8

Instituto Nacional de Estadística y Geografía –INEGI– (varios años). Encuesta Nacional sobre Productividad y Competitividad de las Micro, Pequeñas y Medianas Empresas (ENAPROCE 2015 y 2018). https://bit.ly/3IhbKZK

Ireland, R. D. (2015). 2014 Presidential address: our academy, our future. *Academy of Management Review*, *40*(2), 151-162. https://doi.org/10.5465/amr.2014.0534

Kahn, S. and MacGarvie, M. J. (2016). How important is US location for research in science? *Review of Economics and Statistics*, *98*(2), 397-414. https://doi.org/10.1162/REST_a_00490

Keller, K. R. (2010). How can education policy improve income distribution? An empirical analysis of education stages and measures on income inequality. *The Journal of Developing Areas*, 51-77. https://www.jstor.org/stable/40376250

López-Acevedo, G. (2004). Mexico: Evolution of earnings inequality and rates of returns to education (1988-2002). *Estudios económicos*, 211-284. https://bit.ly/3aiVZoG

Manacorda, M., Sánchez-Páramo, C. and Schady, N. (2010). Changes in returns to education in Latin America: The role of demand and supply of skills. *ILR Review*, *63*(2), 307-326. https://doi.org/10.1177/001979391006300207

Moretti, E. (2004a). Estimating the social return to higher education: evidence from longitudinal and repeated cross-sectional data. *Journal of econometrics*, *121*(1-2), 175-212. https://doi.org/10.1016/j.jeconom.2003.10.015

Moretti, E. (2004b). Workers' education, spillovers, and productivity: evidence from plant-level production functions. *American Economic Review*, *94*(3), 656-690. https://doi.org/10.1257/0002828041464623

Organización para la Cooperación y el Desarrollo Económicos –OECD– (2022). Population with tertiary education (indicador). https://doi.org/10.1787/0b8f90e9-en

Pandey, I. M. (2004). Governance of higher education institutions. *Vikalpa*, *29*(2), 79-84. https://doi.org/10.1177%2F0256090920040207

Peña-Vinces, J. C. and Urbano, D. (2014). The influence of domestic economic agents on the international competitiveness of Latin American firms: Evidence from Peruvian small and medium multinational enterprises. *Emerging Markets Finance and Trade*, *50*(6), 229-248. https://doi.org/10.1080/1540496X.2014.1013865

QS World University Rankings (2020). *The top 200 universities in Latin America 2020*. Quacquarelli Symonds Limited

Rodríguez-Pose, A. and Di Cataldo, M. (2015). Quality of government and innovative performance in the regions of Europe. *Journal of Economic Geography*, *15*(4), 673-706. https://doi.org/10.1093/jeg/lbu023

Summers, L. (2011). Education and Development: The role of higher education. En S. Armstrong y B. Chapman (eds.), *Financing Higher Education and Economic Development in East Asia*. The Australian National University.

Urzúa, S. (2017). The economic impact of higher education. En M. Ferreyra, C. Avitabile, J. Botero Álvarez, F. Haimovich Paz y S. Urzúa, *At a crossroads: higher education in Latin America and the Caribbean* (pp.115-148). The World Bank.

Valero, A. and Van Reenen, J. (2019). The economic impact of universities: Evidence from across the globe. *Economics of Education Review*, *68*, 53-67. https://doi.org/10.1016/j.econedurev.2018.09.001

Zamora-Sánchez, R., Rodríguez-Castellanos, A. and Barrutia-Güenaga, J. (2022). Universidades y desarrollo socioeconómico: una propuesta de evaluación de sus proyectos de vinculación con la sociedad. Problemas del Desarrollo, *53*(210), 181-205. https://doi.org/10.22201/iiec.20078951e.2022.210.69807

Job satisfaction and burnout in professors

Methodology
It is a quantitative, correlational, cross-sectional study.
The Maslach Burnout Inventory test, the Job Satisfaction factors test and a questionnaire were used to identify relevant sociodemographic variables in 61 higher education teachers in Mexico.

Objective
Analyze the levels of stress and job satisfaction among professors
as well as to identify the possible relationship between both variables, which, as reported in the literature, tend to appear simultaneously.

Introduction
The working conditions of professors generate high administrative and academic demands,
which together with the need to use ICT-mediated modalities due to the Covid-19 pandemic generated situations of stress and job dissatisfaction.

Result or conclusion 1
Job satisfaction levels are at medium levels
and are negatively affected by factors such as being a woman, having a low hierarchical position and a second teaching job.

Results or conclusion 2
No teachers were found to present Burnout Syndrome,
however 37% presented at least high levels of emotional exhaustion, depersonalization, or low personal fulfillment.

Result or conclusion 3
No evidence of correlation between Burnout Syndrome and Job Satisfaction was found; however,
the data allow to conclude that it is necessary to work on improving working conditions to achieve adequate levels of well-being and productivity.

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Job satisfaction and burnout in professors

Satisfacción laboral y burnout en personal docente

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Abstract: job Satisfaction (JS) is an emotional state that affects the competitiveness and productivity of organizations, which can be affected by multiple factors, including the response to stress called Burnout Syndrome (BS). The aim of this paper is to measure and describe the level of JS, the prevalence of BS and their relationship. It is a quantitative, correlational, transversal, and non-experimental research. Questionnaires and tests with quantitative scales were used, as well as descriptive and inferential statistical analysis for their interpretation. The sample consisted of 61 higher education teachers from a public university in San Luis Potosí (Mexico). The JS factor test, the Maslach Burnout Inventory and a sociodemographic questionnaire were applied. It was found that the JS of teachers is at a medium level, that the levels of propensity to BS are between mild and moderate. Gender, job title and a second job affect the level of JS. No statistically significant relationship was found between propensity for BS and JS. It is inferred that the organizational context, gender and a second job affect stress and, in turn, promote BS. It is essential to value and improve the conditions of education workers to promote healthy work environments, which not only affects them but also students.

Keywords: work, satisfaction, burnout, teachers, administration, belonging, wellness, organization.

Resumen: la Satisfacción Laboral (SL) es un estado emocional que incide en la competitividad y productividad de las organizaciones, que puede verse afectada por múltiples factores, entre ellos por la respuesta al estrés denominada Síndrome de Burnout (SB). El objetivo de este trabajo es medir y describir el nivel de SL, la prevalencia del SB y su relación. Es una investigación cuantitativa, correlacional, transversal y no experimental. Se utilizaron cuestionarios y pruebas con escalas cuantitativas, así como análisis estadístico descriptivo e inferencial. La muestra es de 61 docentes de educación superior en una universidad pública de San Luis Potosí (México). Se aplica la prueba de factores de SL, la Maslach Burnout-Inventory y un cuestionario sociodemográfico. Se encontró que la SL de docentes se encuentra en un nivel medio, que los niveles de propensión al SB están entre leves y moderados. Además, el género, el puesto y el hecho de tener un segundo empleo como profesor condicionaron la SL. No se encontró una relación estadísticamente significativa entre la propensión al SB y la SL. Se infiere que el contexto organizacional, el género y un segundo empleo inciden en el estrés y, a su vez, propician el SB. Es indispensable valorar y trabajar en las condiciones de los trabajadores de la educación con la finalidad de propiciar ambientes de trabajo saludables, que no solo los afecten a ellos sino también a estudiantes.

Palabras clave: trabajo, satisfacción, *burnout*, profesores, administración, pertenencia, bienestar, organización.

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Introduction

Knowing and measuring the levels of Job Satisfaction (JS) is essential in modern organizations. The market conditions imposed by the global economy demand high levels of competitiveness and productivity to achieve economic and social goals. To achieve this goal, a fundamental component that must be addressed is human talent, as a means to consolidate comparative advantages, increase productivity and economic benefits (Hoboubi *et al.*, 2017). In the current contexts, organizations must emphasize the development of flexible structures that allow innovation and creativity and establish conditions to create and manage knowledge, to apply it in the development of new processes, services and products; as well as to promote its exchange and transfer to generate synergies and development in the social and productive sectors.

The negative physical and mental reactions derived from a work environment and situations that are difficult to cope with are known as occupational stress (Osorio and Cárdenas Nino, 2017). It necessary that organizations identify and measure their levels and impact. Likewise, it is essential to evaluate the perception of job satisfaction of collaborators since its effects are directly reflected in the quality of services and products, productivity, work climate, commitment, among other aspects, necessary for the development and consolidation of organizations. To address stress in academic environments, interventions that include actions aimed at identifying and resolving environmental situations with an ethical approach and oriented to continuous improvement from socio-training are considered appropriate (Fierro-Santillán *et al.*, 2019). Evidence suggests that maintaining low levels of burnout and high job satisfaction have an impact on low resignation intention in teachers (Madigan and Kim, 2021).

Higher education professors currently conduct various activities such as: teaching, research, obtaining of certifications, administrative activities, resource management, tutoring, among others, which implies complex challenges. On the other hand, available resources, support for professors, compensation schemes, among others, are increasingly limited in public and private institutions

(Ruiz de Chávez *et al.*, 2014). Álvarez Silva *et al.* (2022) show that the Covid-19 pandemic and the lack of strategic planning conditions in educational organizations generated adverse situations for teachers, causing high levels of work stress. This study was conducted in a Mexican public education institution located in the city of San Luis Potosí.

Given the conditions faced by professors, the purpose is to identify whether there are low levels of job stress, prevalence of Burnout Syndrome (BS) and a relationship between these variables.

Job Satisfaction (JS)

Job satisfaction is defined as a positive feeling that tends to be stable towards the work activity (Davis and Palladino, 2007). Salessi and Omar (2016) consider it as the attitude that is developed and observed as a result of the experiences in working life. For Guerra *et al.* (2017), it is the willingness of workers towards their working activity. In general terms, satisfaction is affirmed as a perception towards the work experience. On the other hand, Morris and Maisto (2009) relate it to productivity, absenteeism and staff turnover. Low levels of job satisfaction have negative effects on interpersonal relationships, and it is also a factor that can increase stress levels.

Job security conditions, recognition, job enrichment and challenge, possibilities for growth, good interpersonal relationships and the availability of infrastructure, equipment and materials, are factors that make it possible to achieve appropriate levels of job satisfaction (Davis and Palladino, 2007). Judge *et al.* define "[...] job satisfactions as multidimensional psychological responses to work, including cognitive (evaluative) and affective (emotional) components" (2012, p. 2). Also, social skills have an impact on the perception of job satisfaction and contribute to maintaining healthy organizations (Naranjo Pinela *et al.*, 2019).

Burnout Syndrome (BS)

Stress is assumed as a physical and mental response to a challenging context and the difficulty to cope with it, causing depression and anxiety. It affects the well-being and capacity to enjoy life,

which is observed in family and work dynamics. The relationship with the family is affected in terms of alteration in the roles played, as well as in the quality of interaction. In addition, the care of these health disorders implies an expense for the people who are affected, which has indirect effects on the family economy.

The term burnout was first used in the field of psychology by Freudenberger (1974) as a state of fatigue or frustration produced by committing to a cause, way of life or relationship that does not produce an emotional return comparable to the effort. Burnout manifests itself as a feeling of failure and permanent exhaustion, resulting from an overload of demands on the worker's energy, personal resources or spiritual strength. Freudenberger (1974) also attributes it to a confusion between a healthy level of involvement in work, with a level of commitment that manifests a need to be accepted and loved.

Gil-Monte *et al*. (2005) assume it as the effect of permanent exposure to occupational stress of workers in customer service organizations. This research applies the definition proposed by Maslach and Leiter (2016) as the response to chronic emotional and interpersonal stressors in the work environment. The most common causes of SB in education professionals are the relationship between teachers and students, the excess of bureaucratic activities unrelated to their main function, as well as the devaluation of salary and profession (Gluschkoff *et al.,* 2016).

BS dimensions

According to Colino and Pérez de León (2015), SB manifests through three dimensions: emotional exhaustion, depersonalization and low personal fulfillment. These conditions affect the person's general state of well-being and fulfillment, gradually decreasing the perception of self-efficacy and joy for work. Each of them is described below.

Emotional exhaustion manifests itself with a feeling of having no energy and not having emotional resources to face the day to day (De la Fuente *et al.,* 2015). It is a feeling of being emotionally exhausted by the demands of work. Depersonalization is presented through insensitivity

and cold attitudes towards the person receiving the service, in addition to not showing interest towards the needs and particular qualities, taking distance from them (Maslach *et al.*, 2010). Depersonalization is the presence of negative responses, attitudes and feelings on the part of the worker towards the beneficiaries of the service (Arquero and Donoso, 2013). It is a recognition of presenting indifferent and cold attitudes.

Low self-fulfillment refers to a low perception of achievement at work, leading to a negative self-concept (Garcés de los Fayos Ruiz et al., 2001). It is presented through the idea that nothing additional or special can be offered in the service, which derives in a feeling of disappointment (Maslach *et al.,* 2010). Low self-fulfillment is presented as a negative perception of achievement at work by the worker, also called self-efficacy.

Relationship between JS and BS in teachers

There are experiences in Latin America measuring the variables that are the object of this study in teachers. Those considered relevant for this study are mentioned below.

Cerrón Valdéz (2019) at the Universidad Nacional del Centro del Perú, aimed to establish the relationship between BS and JS. The Maslach Burnout Inventory test is used to measure BS and the Job Satisfaction Scale SL-SPC for JS. A statistically significant and inverse relationship was found between JS and BS. A relationship was also found between BS and sociodemographic variables (age, gender and category).

Arias *et al*. (2017), analyzed the relationships between BS, JS and interpersonal relationships in a group of teachers in an educational institution in Arequipa (Peru). To determine the propensity to burnout, the MBI test is used as well as the Warr *et al.* (1979) scale of intrinsic and extrinsic factors for JS levels. An inverse and moderate relationship was found between JS and BS. Also, there is no statistically significant relationship as a function of teachers' gender or position. The JS has a predictive and significant effect on BS.

Condo (2018) studied the influence of JS and job stress using the MBI test for BS levels and the SL-SPC job satisfaction scale in professors of the

Faculty of Education of the UNSA (Mexico). A statistically significant inverse mean-strength inverse relationship was found between JS and BS.

On the other hand, Albarracin Chipana *et al.* (2019) determined the correlation between BS and JS in undergraduate teachers at a Peruvian university using the MBI test for burnout and the Montoya Cáceres *et al.* (2017) test for job satisfaction. A low inverse correlation was found between JS and BS, which was not statistically significant.

Agurto Guevara (2019), conducted research on teachers at Universidad San Pedro in Lima (Peru) with the aim of determining the correlation between BS and JS in undergraduate teachers of English; the MBI test is also used to measure the degree of burnout and the JS questionnaire of Montoya Cáceres *et al.* (2017). No statistically significant relationship was found between JS and BS.

Jiménez Carazas (2019) conducted research to determine the relationship between BS with JS in teachers at the Universidad Andina del Cusco (Peru). The Maslach Burnout Inventory test was used to measure BS as well as the ESL-09 Job Satisfaction Scale Questionnaire. A statistically significant inverse relationship was found between JS and BS. Smetackova *et al.* (2019) assert that job well-being does not prevent BS, but it is an opposite state to BS.

To analyze the possible correlation of BS and JS in teachers of the Jorge Hunneus Zegers Educational Center (Chile), Aguilef Cháves *et al.* (2016) elaborated four questions of JS components, while using the MBI test for BS. A statistically significant and inverse relationship was found between JS and BS.

Finally, Núñez Cordero (2019) conducts a study on the teaching staff of the Military School of Chorrillos (Peru). Instruments were designed by the authors to measure BS and JS. A statistically significant and inverse relationship was found between JS and BS, as well as an average negative correlation between JS and BS.

The literature review shows that in most studies (Aguilef Cháves *et al.*, 2016; Arias *et al.*, 2017; Condo, 2018; Jiménez Carazas, 2019; Núñez Cordero, 2019; Cerrón Valdéz, 2019) statistically significant and inverse relationships were found at high, medium and low levels between JS and BS. JS is also assumed to be an effect of

BS; therefore, the higher the BS levels, the lower the JS levels and vice versa. It should be noted Agurto Guevara (2019) and Albarracin Chipana *et al.* (2019), found no statistically significant relationship between the variables.

It is also seen that Maslach and Jackson's (1986) MBI test is used in most research to measure BS (Aguilef Cháves *et al.*, 2016; Arias *et al.*, 2017; Condo, 2018; Albarracin Chipana *et al.*, 2019; Agurto Guevara, 2019; Jiménez Carazas, 2019; Cerrón Valdéz, 2019), since it is considered a referent for these purposes. On the other hand, JS is measured through different instruments already validated, while there are investigations in which instruments were proposed.

Materiales y método

El objetivo de esta investigación es describir el nivel de Satisfacción Laboral (SL), la prevalencia del Síndrome de Burnout (SB) y, determinar la posible relación entre dichas variables. Esta investigación es de tipo cuantitativa, no experimental, correlacional y transversal. Se utilizaron encuestas y pruebas con escalas cuantitativas para mediar las variables y luego estadística descriptiva e inferencial para el análisis de resultados.

La población de estudio está formada por docentes que imparten clases frente a grupo en una universidad de educación superior en San Luis Potosí, México, en el semestre enero a junio de 2022. La muestra estuvo formada por 61 docentes.

Materials and Method

The aim of this research is to describe the level of Job Satisfaction (JS), the prevalence of Burnout Syndrome (BS) and to determine the possible relationship between these variables. This research is quantitative, non-experimental, correlational and cross-sectional. Surveys and tests with quantitative scales were used to measure the variables, and then descriptive and inferential statistics were used for analyzing the results.

The study population consisted of teachers who teach in front of a group at a university in San Luis Potosí, Mexico, in the semester January to June 2022. The sample consisted of 61 professors.

The following independent variable is defined: levels of BS and its dimensions: emotional fatigue, depersonalization and personal fulfillment. The dependent variable is the level of JS, which includes the following dimensions: satisfaction with the job in general, with the physical environment, with the way in which the job is performed, opportunity for improving, relationship with the boss, payment, autonomy and recognition.

The hypotheses proposed are the following:

H1. Teachers' JS levels are low (inadequate).
H2. Teachers are affected by the BS.
H3. Teachers' JS levels are affected by BS levels.

Para determinar los niveles de SL se utilizó el cuestionario de Chiang Vega *et al.* (2008). El instrumento contiene un total de 36 ítems en forma de afirmaciones divididos en ocho subescalas: satisfacción hacia el trabajo en general, hacia el ambiente físico, formas en las que realiza el trabajo, oportunidades de desarrollo, relación con el jefe, remuneración, autonomía y reconocimiento. La escala de medición va del 1 al 5 donde 1 es bajo, 3 medio y 5 alto.

Para medir el SB se utilizó la segunda versión traducida al castellano (Alvarado Calderón, 2009) de la prueba Maslash Burnout Inventory (MBI) (Maslach y Jackson, 1986). La prueba contiene tres subescalas: Cansancio Emocional (CE), Despersonalización (D) y Realización Personal en el trabajo (RPT). El MBI contiene 22 ítems en forma de afirmaciones.

The Chiang Vega *et al.* (2008) questionnaire was used to determine the JS levels. The instrument contains a total of 36 items in the form of statements divided into eight subscales: satisfaction with the job in general, with the physical environment, ways in which the work is performed, improvement opportunities, relationship with the boss, payment, autonomy and recognition. The measurement scale ranges from 1 to 5, where 1 is low, 3 is medium and 5 is high.

The second version translated into Spanish (Alvarado Calderón, 2009) of the Maslash Burnout Inventory (MBI) test (Maslach and Jackson, 1986) was used to measure BS. The test contains three subscales: Emotional Fatigue (EF), Depersonalization (D) and Personal Fulfillment at Work (PFW). The MBI contains 22 items in the form of statements.

To determine the internal consistency of Chiang Vega *et al.* (2008) JS questionnaire, the Cronbach's Alpha statistic was used, once the instrument was piloted and the data were analyzed in the SPSS version 25 statistical software. The details by dimension are presented in Table 1.

Table 1

Reliability of the subscales of the Job Satisfaction Questionnaire according to the piloting study.

Factor of Job Satisfaction	No. of initial items	Initial Cronbach's Alpha	No. of final items	Cronbach's Alpha final
At work in general	5 (1,3,16,22 and 31)	0.779	3 (22 and 31 are deleted)	0.832
With improvement opportunities	6 (2,14,18,20, 23 and 24)	0.900	6 (2,14,18,20, 23 and 24)	0.900
With payment	3 (8,13 and 25)	0.810	3 (8,13 and 25)	0.810
With recognition	3 (6,17 and 32)	0.602	3 (6,17 and 32)	0.602
With the physical work environment	6 (5,9,15,19,26 and 28)	0.891	6 (5,9,15,19, 26 and 28)	0.891
With the way the job is performed	6 (7,12,21,27,34 and 35)	0.897	6 (7,12,21,27, 34 and 35)	0.897
With the subordinate-supervisor relationship	4 (10, 29, 33 and 36)	0.921	4 (10, 29, 33 and 36)	0.921
With autonomy	3 (4,11 and 30)	0.814	3 (4, 11 and 30)	0.814

To measure the internal consistency of the Maslach Burnout Inventory by Maslach and Jackson (1986), a pilot test and data analysis were performed in the SPSS version 25 statistical software, and an overall reliability level of 0.71 was obtained (Table 2).

Table 2
Reliability of the subscales of the MBI test according to the piloting study

Dimension of Burnout Syndrome	No. de items	Cronbach's Alpha	No. of items	Cronbach's Alpha
Emotional Fatigue (EF)	9 (12,3,6,8,13,14,16 and 20)	0.876	9	0.876
Personal fulfillment	8 (4,7,9,12,17,18,19 and 21)	0.600	6 (4 and 12 are eliminated)	0.745
Depersonalization (D)	5 (5,10,11,15 and 22)	0.565	3 (5 and 10 are eliminated)	0.741

Results

This section presents the main results of this research work.

Quantitative JS results

Teachers' JS is at a medium level in the eight dimensions measured. The lowest mean scores per dimension (on a scale of 1 to 5) were obtained in satisfaction with the job in general (3.0) and in satisfaction with the physical environment (3.0). The highest scores were for satisfaction with payment (3.6) and autonomy (3.8) (see Figure 1).

Figure 1
Average JS scores
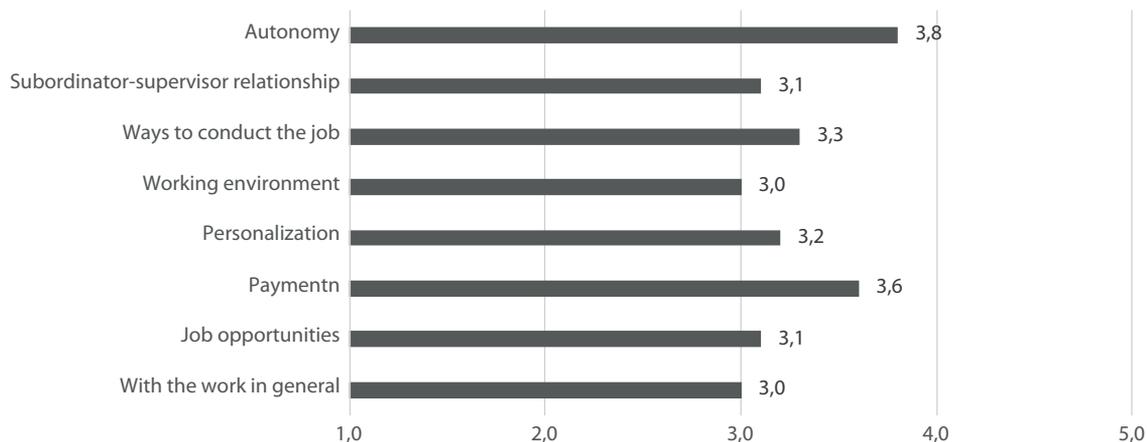
Statistically significant relationships (p<0.05) were found between global JS and some socio-demographic variables:

- The hours worked in front of a group and the global JS with (p=0.028, Mann Whitney U), teachers who have more hours with a group have a lower global JS and those

who have fewer hours with a group have a higher global JS.

- Holding an additional paid job is related to overall JS, (p=0.034, Mann Whitney U), professors who hold an additional paid job have lower overall JS, and those who do not hold an additional paid job have higher overall JS.

- The place where the additional paid work is performed also affects overall JS (p=0.019, Kruskall-Wallis H). The highest levels of global JS are found in those who have an educational institution as additional paid work, followed by those who work in a private company; the lowest global JS is found in those who have their own business as additional paid work.

The following statistically significant relationships were found (p<0.05) when analyzing the possible relationship of each of the sociodemographic variables, but this time with the JS dimensions.

- Gender is related to overall job satisfaction, with men being more satisfied and women less satisfied (p=0.007, Mann Whitney U).

- Gender has a relationship with satisfaction with how they perform the job with (p=0.045, Mann Whitney U), men are more satisfied and women are less satisfied in terms of how they perform the job.

- There is also a statistically significant relationship between the place where the additional paid work is performed and satisfaction with payment (p=0.033, Kruskall-Wallis H). The highest satisfaction with payment is found in those who have an educational institution as additional paid work, followed by those who work in a private company. The lowest satisfaction with payment is found in those who have their own business as additional paid work (see Table 3).

Table 3

Sociodemographic variables in relation to mean JS dimensions

Variable 1 Sociodemographic	Variable 2 JS dimension	Level of significance	Statistical test
Genre	Satisfaction with the work in general.	0.007	Mann Whitney U
	Satisfaction with the way the job is performed.	0.045	
Place where the additional paid work is performed.	Satisfaction with payment	0.033	H de Kruskall-Wallis

The analysis of the sociodemographic variables in relation to each of the JS indicators (items) also showed statistically significant relationships (p<0.05). Table 4 shows the job satisfaction indicators that are influenced by the sociodemographic variables analyzed.

Table 4

Sociodemographic variables in relation to JS indicators (items). Fisher's exact test

Variable 1 Job satisfaction	Variable 2 Sociodemographic	Level of significance
How do you feel with the support provided by the administrative area to carry out your work	Marital status	0.036
How do you feel with the support you have received from the authorities		0.017
How do you feel with your working environment	Gender	0.004
How do you feel about the opportunities the job offers to do the things you love?		0.028

How do you feel with the possibility you have to decide autonomously your own working method	Place where the additional paid work is conducted	0.016
Are you acknowledged when you do a good job		0.031
How do you feel with the possibility of autonomously deciding the planning of your work		0.018
How do you feel with the payment received		0.016
How do you feel with the way your immediate supervisor evaluates your work		0.031
How do you feel when someone monitors your work		0.001
How do you feel with job training and upgrading opportunities		0.026
How do you feel with the physical environment and space of your workplace	Number of hours in front of group	0.024
How do you feel with the way your work is evaluated and judged by your immediate supervisor? Do you feel that you have a positive attitude towards your work.		0.033
How do you feel with the ventilation of your workplace		0.048
How do you feel with the temperature in your workplace		0.024
How do you feel about the objectives and goals you have to achieve in your job?		0.014
How do you feel with equal treatment and fairness in your work	Contract hours in face-to-face mode	0.000

It was found that women are more dissatisfied with the hygienic conditions of the work area (temperature), and perceive fewer opportunities for their academic fulfillment and to perform tasks they like. Single people are more satisfied with the support provided by the administrative area to carry out their work and with the support received from superiors, and married people are less satisfied with these areas.

People who perform additional paid work in a place other than an educational institution perceive more possibilities of autonomously deciding their own work method, the recognition they receive for the work performed, the possibility of autonomously deciding the planning of their work, satisfaction in relation to the salary received, the acknowledgement of their boss, the supervision of the work they perform, and the opportunities for academic fulfillment. In addition, there are higher satisfaction levels among those who have an additional paid job in an educational institution, followed by those who work in a private company; the lowest satisfaction levels in these areas are found among those who have

their own business as an additional paid job. Then, a difference is observed between hourly teachers who also work as professionals in their field and those who teach in different institutions as their main activity, with the first group showing the highest satisfaction levels in these areas.

The sociodemographic variable number of hours with a group is related to the following job satisfaction variables: the environment and physical space of their workplace; the way their work is evaluated and judged by their immediate supervisor; the ventilation of their workplace, the temperature in their workplace; and the way they feel in relation to the objectives and goals they must achieve in their work. The higher the number of hours with the group, the lower the satisfaction in these items, the lower the number of hours with a group, the higher the satisfaction. Contract hours are related to equal treatment and fairness at work, the lower the number of contract hours, the lower the satisfaction with equal treatment and fairness at work, the higher the number of contract hours, the higher the satisfaction with equal treatment and fairness at work.

BS Results

According to the Maslach Burnout Inventory, a subject must have at least two dimensions affected to be considered as suffering from the syndrome (mental fatigue, depersonalization and low personal fulfillment). High levels in the first two and low levels in the third. It was found that no teacher presents BS, although it was found that 37% of teachers have a propensity to the syn-drome and have at least one dimension affected. Twenty-one percent presented a slight and 16% a moderate risk of BS, which differ according to the test, because the slight risk implies the need for reflection on possible improvements by the administration, while the moderate risk highlights the need to develop a plan to address the problem areas. In summary, 37 % of the sample presents some propensity to Burnout Syndrome (Figure 2).

Figure 2

Indications of BS frequency in the sample
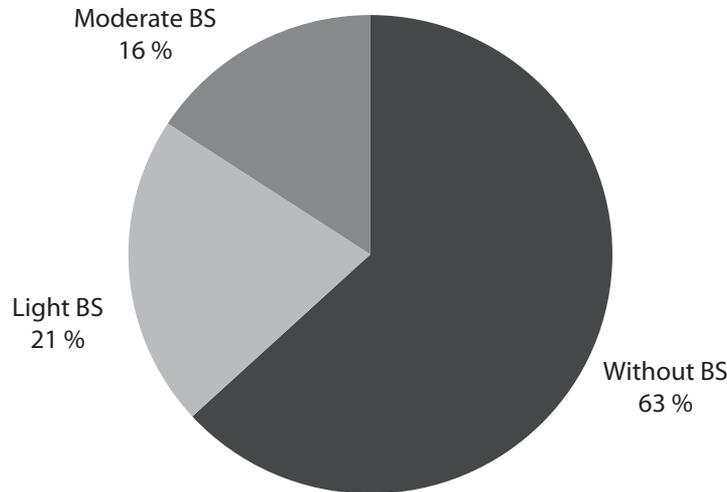
The following results were found with respect to the prevalence of BS by dimension in professors. It should be mentioned that low levels of Emotional Fatigue and Depersonalization are better, while, in the case of Personal Accomplishment, higher levels are better (Table 5). According to the Maslach Burnout Inventory, the means obtained for the population analyzed in the three dimensions do not show the existence of BS.

Table 5

Results of the BS dimensions in professors

Dimension	Levels		
	Low	Medium	High
Emotional fatigue	52.63 %	21.05 %	26.32 %
Depersonalization	78.95 %	15.79 %	5.26 %
Personal fulfillment	21.05 %	21.05 %	

Correlation between JS and BS

When applying the nonparametric Mann Whitney U test, Kruskall-Wallis H test, Pearson's Chi-square test and Fisher's exact test, as appropriate, no statistically significant relationship was found between the levels of BS propensity and the global JS, its dimensions and indicators (items). Nor when BS and its dimensions were crossed with sociodemographic variables. The canonical correlation also does not show an appropriate adjustment that would allow establishing a correlation between the dimensions of the JS and the BS.

Using Spearman's nonparametric Rho test, the correlations were analyzed in terms of their strength and direction (direct or inverse) (see Table 6).

Table 6

Spearman correlation of JS and BS dimensions

		General work	Academic fulfillment	Payment	Ack-nowle-dgment	Physical environ-ment	How the work is performed	Subordinate-supervisor relationship	Auto-nomy	Emo-tional fatigue
Emotional fatigue	Correlation coefficient	-0.292	-0.139	-0.131	-0.118	-0.150	-0.430	-0.261	-0.045	1.000
	Sig. (bilateral)	0.226	0.570	0.592	0.630	0.541	0.066	0.281	0.855	
Depersona-lization	Correlation coefficient	-0.116	-0.066	-0.141	0.031	-0.059	-0.147	-0.065	-0.034	1.000
	Sig. (bilateral)	0.636	0.787	0.566	0.901	0.809	0.549	0.791	0.892	
Fulfillment	Correlation coefficient	0.215	0.200	0.391	0.251	0.286	0.450	0.373	0.271	1.000
	Sig. (bilateral)	0.376	0.411	0.098	0.300	0.235	0.053	0.116	0.262	

No statistically significant relationship was found between JS and BS variables, a result similar to that obtained by means of nonparametric tests that considered the crossing of quantitative variables (JS levels) and qualitative variables (BS propensity levels: low, moderate and severe). The results presented agree with those of Agurto Guevara (2019) and Albarracin Chipana et al. (2019), which does not mean that there is no relationship in the sample; hence, it is deduced that the relationship is not statistically significant to be able to make inferences to the study population, i.e., the totality of higher education professors in the city of San Luis Potosí.

Regarding the relationship between the degree of BS and sociodemographic variables, no statistically significant relationship was found in this study, which coincides with Arias *et al.* (2017) whose research only showed a relationship with the teacher's gender and position. Unlike the present research, Cerrón Valdéz (2019) did find a statistically significant relationship between BS and the sociodemographic variables: age, gender and category.

Teaching is a job that involves the engagement of emotions. The way in which daily work situations are faced with students, colleagues, and parents have an impact on the emotional energy of the teacher (Yin *et al.*, 2019). For their part, organizational design, processes, and work schemes have the potential to become stressors that, together with the burnout of intense interpersonal relationships, are potentially negative for teacher well-being. In addition, burnout and personal well-being of teachers should be considered to impact students (Braun *et al.*, 2020) and thus educational outcomes. Robinson *et al.* (2019) also highlight the tendency of teachers to drop out their jobs, so it is considered that addressing the potential effects of BS and its impact on JS will allow to design strategies to retain talent and consolidate the teaching staff of the institution in which this study is conducted.

Discussion and conclusions

To conclude, this research provides a scheme of factors of JS and its effect on the personal and work outcomes of teachers (Figure 3), which is based on the results of the present research.

The validation is carried out by means of inferential statistical methods. Capone and Petrillo (2020) consider that in order to improve teachers' well-being at work, it is necessary to work on their self-perception of JS.

Diagram of job satisfaction factors and relationship with personal and work results
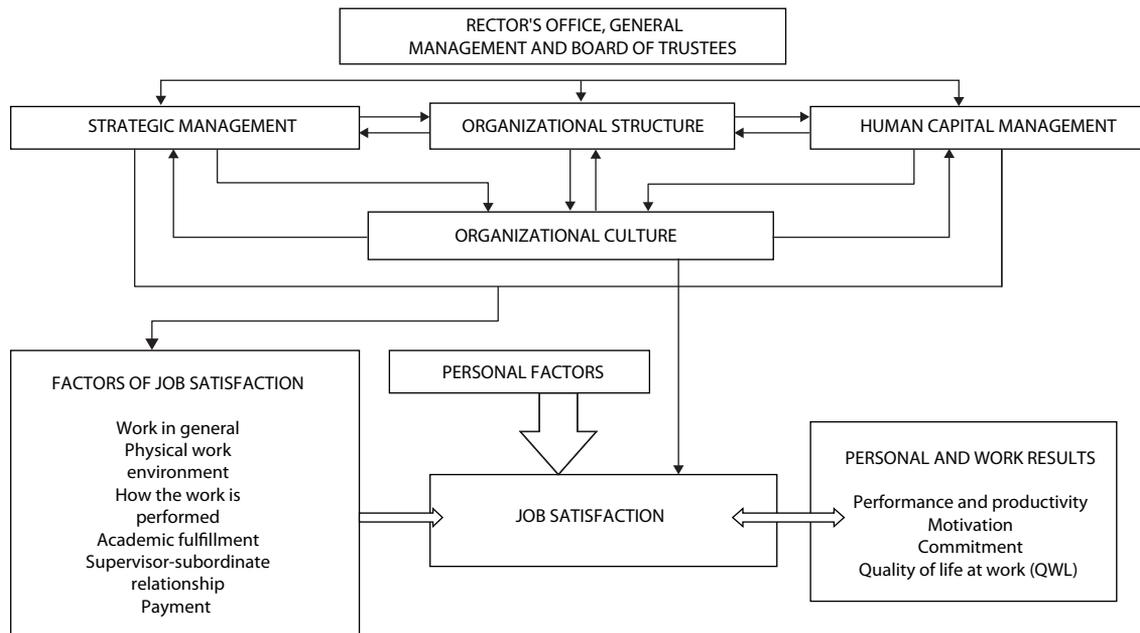
Several models and JS factors were found in the literature review, as well as their relationship with labor outcomes. Some consider that external and internal factors determine the levels of JS in workers (Anaya Nieto and Suárez Riveiro, 2010). Another position relates JS factors with the working environment (Manosalvas Vaca *et al.*, 2015). Skaalvik and Skaalvik (2020) state that labor resources such as autonomy and support from the boss decrease BS levels, while Drüge *et al*. (2021) state that in addition to labor resources, the level of demands also plays an important role in BS.

Some people also relate human resource management practices to the organizational climate, which in turn influences cognitive and affective states such as JS and motivation, which in turn affect organizational behaviors such as performance, which impact organizational productivity (Kopelman *et al.*, 1990).

According to Pérez Bilbao and Fidalgo Vega (2006), personal and work circumstances are variables that have an impact on the JS. While Patlán-Pérez (2016) states that the components of Quality of Life at Work (QWL) affect the satisfaction of different needs of the worker. According to the review conducted and the results obtained, it is agreed that the QWL are also factors of job satisfaction.

The proposed scheme (Figure 3) represents the relationship between the administration of the institution, the factors of job satisfaction and the personal and work outcomes (sociodemographic) of teachers in a higher education institution under a systemic approach.

It is assumed that there is a main figure constituted by a rector or general director and the

respective board of directors in higher education institutions; in some cases, integrated by directors and deputy directors of administrative and academic areas. Together they form the governing body and are responsible for establishing the vision, mission, business model, value proposition and strategic management, as well as determining the organizational structure that affects the management of human capital. These three elements influence and are influenced by organizational culture (there are four organizational elements by including organizational culture) (Janićijević, 2013; Zhenga *et al.*, 2010).

The four elements of the organization mentioned above have an impact on teachers' job satisfaction and its factors (satisfaction with the job in general, physical work environment, the way in which the work is performed, fulfillment opportunities, supervisor-subordinate relationship, remuneration, autonomy and recognition). These factors (work circumstances), together with the employee's personal factors, have a decisive influence on the teacher's JS. This has as an effect on higher or lower levels of personal and work results (performance and productivity, motivation, commitment and quality of life at work). In turn, these also influence JS (Hoboubi *et al.,* 2017; Vargas Vega *et al.,* 2018). In addition, Wang *et al*. (2020) claim that BS and JS can play a mediating role towards work stress and organizational commitment.

The scheme developed is considered useful because, in addition to modeling the phenomenon of JS and BS in the organizational context, it represents the relationship between organizational management, organizational culture, the impact on job satisfaction factors, on job satisfaction and on personal and work results, their relationships and levels under a systemic approach.

This study determined the levels of JS, the prevalence of BS and explored the existence of a relationship between the variables.

Regarding the hypotheses, the following was found:

> **H1.** Teachers' levels of JS are low (inadequate). The hypothesis is rejected, average levels were found.

> **H2.** Teachers are affected by BS. The hypothesis is rejected, no teacher suffers from it.
> **H3.** Teachers' levels of JS are affected by levels of BS. The hypothesis is rejected; no statistically significant relationship was found between the variables. Teachers' JS is medium.

The levels of JS in professors showed a higher level of satisfaction in payment and autonomy to perform their work, and the lowest were those related to work in general and the physical environment.

It was found that none of the teachers suffer from BS; however, one third have a mild and moderate propensity to suffer from the syndrome. No statistically significant relationship was found between Burnout Syndrome and sociodemographic variables.

Regarding the relationship between the levels of JS and the propensity to BS, the following conclusions were obtained:

- In this study, weak and very weak negative correlations were found between emotional fatigue and job satisfaction factors, as well as between depersonalization and job satisfaction; this implies that as emotional exhaustion increases, job satisfaction decreases, and as depersonalization increases, job satisfaction decreases.

- There was a weak and very weak positive relationships between personal fulfillment and JS factors, i.e., as personal fulfillment increases, JS increases.

- The above two arguments are in line with existing theory, although no inference can be made from the sample to the population, due to the weak correlations and the fact that no statistically significant relationship was found between the variables.

- It is very important to carry out this type of study because the results obtained make it possible to determine the existence or not of the effect of stress on JS and in turn to generate proposals that help to increase satisfaction in higher education professors, which in turn helps to improve levels of performance, productivity, motivation, commitment and quality of life at work.

- The institution should consider, among other actions: (a) review and improve conditions related to the physical work environment; (b) establish clear guidelines for promotions and transparency mechanisms, as well as an oversight committee for this purpose; (c) evaluate psychosocial risk factors of the institute's teaching and administrative staff every year or after a traumatic event that warrants it.

References

Aguilef Cháves, J. P., Soto Fuentes, J. A. and Victoriano González, P. P. (2016). *Relación existente entre el Burnout y la satisfacción laboral de los docentes del establecimiento Jorge Hunneus Zegers.* (Tesis de Doctorado). UCINF. https://bit.ly/3SewsxN

Agurto Guevara, A. V. (2019). *Relación entre Síndrome de Burnout y satisfacción laboral en docentes de la IE San Pedro 2019.* (Tesis de Licenciatura). Universidad César Vallejo. https://bit.ly/3vpfcMQ

Albarracin Chipana, C. Z., Castro Ruiz, E. and Quevedo Quevedo, J. (2019). *Síndrome de Burnout y su relación con la satisfacción laboral en docentes del área de inglés de pregrado de una universidad privada de Lima 2019-I.* (Tesis de Maestría). Universidad Tecnológica de Perú. https://bit.ly/3Q7wXI4

Alvarado Calderón, K. (2009). Validez factorial de Maslasch Burnout Inventory (versión castellana) en educadores costarricenses. *Revista Electrónica Actualidades Investigativas en Educación*, *9*(1), 1-22. https://bit.ly/3cI0ZUw

Álvarez Silva, L. A., Herrera López, P. S., Lániz Vargas, C. A. and González Zhagñay, J. O. (2022). Estrés laboral docente, e-learning y tiempos de COVID-19. *PODIUM,* (41), 105-118. https://doi.org/10.31095/podium.2022.41.7

Anaya Nieto, D. and Suárez Riveiro, J. M. (2010). Evaluación de la satisfacción laboral del profesorado y aportaciones a su mejora en orden a la calidad de la educación. *REOP-Revista Española de Orientación y Psicopedagogía*, *21*(2), 283-294. https://bit.ly/3cT28ZD

Arias, W., Sánchez, M. and Ceballos, K. (2017). Síndrome de burnout, satisfacción laboral y relaciones interpersonales en profesores de una institución educativa de Arequipa. *Acta Psicológica Peruana*, *2*(1), 118-139. https://bit.ly/3S6FBZk

Arquero, J. L. and Donoso, J. A. (2013). Docencia, investigación y burnout: el síndrome del quemado en profesores universitarios de Contabilidad. *Revista de contabilidad*, *16*(2), 94-105. https://doi.org/10.1016/j.rcsar.2013.04.001

Braun, S. S., Schonert-Reichl, K. A. and Roeser, R. W. (2020). Effects of teachers' emotion regulation, burnout, and life satisfaction on student well-being, *Journal of Applied Developmental Psychology, 69*, 101151. https://doi.org/10.1016/j.appdev.2020.101151

Capone, V. and Petrillo, G. (2020). Mental health in teachers: Relationships with job satisfaction, efficacy beliefs, burnout and depression. *Curr Psychol 39*, 1757-1766. https://doi.org/10.1007/s12144-018-9878-7

Cerrón Valdéz, M. K. (2019). *Síndrome de Burnout y satisfacción laboral docente en la Universidad Nacional del Centro del Perú.* (Tesis de Licenciatura). Universidad Continental, Huancayo, Perú. https://bit.ly/3ziPzy7

Chiang Vega, M. M., Salazar Botello, C. M., Huerta Rivera, P. C. and Núñez Partido, A. (2008). Clima organizacional y satisfacción laboral en organizaciones del sector estatal (Instituciones públicas) Desarrollo, adaptación y validación de instrumentos. *Universum (Talca), 23*(2), 66-85. http://dx.doi.org/10.4067/S0718-23762008000200004

Colino, N. and Pérez de León, P. (2015). El síndrome de burnout en un grupo de profesores de enseñanza secundaria en Montevideo. *Ciencias Psicológicas*, *9*(1), 27-41. https://bit.ly/3bhWBLD

Condo, G. C. (2018). *Relación entre la satisfacción laboral y el Síndrome de Burnout en los docentes de la Facultad de Educación de la Unsa-2017.* https://bit.ly/3cTTsSP

Davis, S. and Palladino, J. (2007). *Psicología.* 5ª. Ed. Editorial Pearson Educación.

De la Fuente, E. I., García, J., Cañadas, G. A., San Luis, C., Cañadas, G. R., Aguayo, R. and Vargas, C. (2015). Propiedades psicométricas y baremos del Cuestionario de Burnout Granada en profesionales de Enfermería. *International Journal of Clinical and Health Psychology*, *15*(2), 130-138. https://bit.ly/3zcrfhu

Drüge, M., Schladitz, S., Wirtz, M. A. and Schleider, K. (2021). Psychosocial burden and strains of pedagogues—using the job demands-resources theory to predict burnout, job satisfaction, general state of health, and life satisfaction. *International Journal of Environmental Research and Public Health*, *18*(15), 7921. http://dx.doi.org/10.3390/ijerph18157921

Fierro-Santillán, C., Díaz-Azuara, S. and Tobón, S. (2019). Estudio del estrés académico desde el enfoque socioformativo mediante la cartografía conceptual. *Educación y Humanismo, 21*(37), 8-27. https://doi.org/10.17081/eduhum.21.37.3123

Garcés de los Fayos Ruiz, E., Nieto, G., Madrid, A. and Jiménez, G. (2001). *Estrés profesional y estrategias de prevención.* Algama Desarrollo Empresarial.

Gil-Monte, P. R., Carretero, N., Roldán, M. and Núñez-Román, E. V. A. (2005). Prevalencia del síndrome de quemarse por el trabajo (burnout) en monitores de taller para personas con discapacidad. *Revista de Psicología del Trabajo y de las Organizaciones, 21*(1-2), 107-123. https://bit.ly/3vs3zEE

Gluschkoff, K., Elovainio, M., Kinnunen, U., Mullola, S., Hintsanen, M., Keltikangas-Järvinen, L. and Hintsa, T. (2016). Work stress, poor recovery and burnout in teachers. *Occupational Medicine, 66*(7), 564-570. https://doi.org/10.1093/occmed/kqw086

Guerra, P., Santander, S. and Rodríguez, P. (2017). Satisfacción laboral y su relación con el estrés. *Revista CienciAmérica*, *6*(1), 27-33. https://bit.ly/3vswsk1

Hoboubi, N., Choobineh, A., Ghanavati, K. F., Keshavarzi, S. and Hosseini, A. A. (2017). The impact of job stress and job satisfaction on workforce productivity in an iranian petrochemical industry. *Safety and health at work, 8,* 67-71. https://doi.org/10.1016/j.shaw.2016.07.002

Janićijević, N. (2013). The mutual impact of organizational culture and structure. *Economic Annals, 59*(198), 35-60. https://doi.org/10.2298/EKA1398035J

Jiménez Carazas, J. M. (2019). *Síndrome de burnout y satisfacción laboral en docentes de la Escuela Profesional de Obstetricia de la Universidad Andina del Cusco-2016.* (Tesis de Maestría). Universidad Andina de Cusco. https://bit.ly/3OLOOn4

Judge, T. A., Hulin, C. L. and Dalal, R. S. (2012). Job satisfaction and job affect. En S.W.J. Kozlowski (ed.), *The Oxford Handbook of Organizational Psychology*. Oxford University Press. https://bit.ly/3dpDa44

Kopelman, R. E., Brief, A. P. and Guzzo, R. A. (1990). The role of climate and culture in productivity. En B. Schneider (ed.), *Organizational Climate and Culture* (pp. 282-318). Jossey-Bass.

Madigan, D. J. and Kim, L. E. (2021). Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit, *Teaching and Teacher Education, 105*, 103425. https://doi.org/10.1016/j.tate.2021.103425

Manosalvas Vaca, C. A., Manosalvas Vaca, L. O. and Nieves Quintero, J. (2015). El clima organizacional y la satisfacción laboral: un análisis cuantitativo riguroso de su relación. *AD-minister,* (26), 5-15. https://bit.ly/3zKlhWH

Maslach, C. and Jackson, S.E. (1986). *Maslach Burnout Inventory Manual.* 2ª ed. Consulting Psychologists Press.

Maslach, C. and Leiter, M. P. (2016). Burnout. En Fink, G. (ed.), *Stress: concepts, cognition, emotion, and behavior. Handbook of Stress Series Volume 1.* (pp. 351-357). Academic Press. https://doi.org/10.1016/B978-0-12-800951-2.00044-3

Maslach, C., Jackson S. E. and Leiter M. P. (2010). *Maslach Burnout Inventory Manual* (3rd Ed.). Mind Garden, Inc.

Montoya Cáceres, P., Bello-Escamilla, N., Bermúdez Jara, N., Burgos Ríos, F., Fuentealba Sandoval, M. and Padilla Pérez, A. (2017). Satisfacción laboral y su relación con el clima organizacional en funcionarios de una universidad estatal chilena. *Ciencia y Trabajo, 19*(58), 7-13. https://bit.ly/3OFG41O

Morris, Ch. G. and Maisto, A. A. (2009). *Psicología.* 13ª ed. Editorial Prentice Hall.

Naranjo Pinela, T. C., Espinel Guadalupe, J. V. and Robles Amaya, J. L. (2019). Habilidades sociales como factor crítico en la satisfacción laboral. *PODIUM,* (36), 89-102. https://doi.org/10.31095/podium.2019.36.6

Osorio, J. E. and Cárdenas Nino, L. (2017). Work stress: a review study. Diversitas: *Perspectivas en Psicología, 13*(1), 81-90. http://dx.doi.org/10.15332/s1794-9998.2017.0001.06

Patlán-Pérez, J. (2016). Derechos laborales: una mirada al derecho a la calidad de vida en el trabajo. CIENCIA ergo-sum, *Revista Científica Multidisciplinaria de Prospectiva, 23*(2), 121-133. https://bit.ly/3PGaylz

Pérez Bilbao, J. and Fidalgo Vega, M. (2006). *NTP 394: Satisfacción laboral: escala general de satisfacción.* Ministerio del Trabajo y Asuntos Sociales de España: España. https://bit.ly/3cW59rS

Robinson, O. P., Bridges, S. A., Rollins, L. H. and Schumacker, R. E. (2019), A study of the relation between special education burnout and job satisfaction, *Journal of Research in Special Educational Needs, 19*(4), 95-303. https://doi.org/10.1111/1471-3802.12448

Ruiz de Chávez, D., Pando, M., Aranda, C. and Almeida, C. (2014). Burnout y work engage-

ment en docentes universitarios de Zacatecas. *Ciencia & Trabajo, 16*(50), 116-120. https://bit.ly/3OLGiEw

Salessi, S. M. and Omar, A. G. (2016). Satisfacción laboral genérica. Propiedades psicométricas de una escala para medirla. *Alternativas en Psicología*, 93-108. https://bit.ly/3zKnOjz

Skaalvik, E. M. and Skaalvik, S. (2020). Teacher burnout: relations between dimensions of burnout, perceived school context, job satisfaction and motivation for teaching. A longitudinal study. *Teachers and Teaching, 26* (7-8), 602-616. https://doi.org/10.1080/13540602.2021.1913404

Smetackova, I., Viktorova, I., Martanova, V. P., Pachova, A., Francova, V. and Stech, S. (2019). *Front. Psychol., 10,* 1-8, 2287. https://doi.org/10.3389/fpsyg.2019.02287

Vargas Vega, T. D., Vizzuett Balderas, V., Amador Montiel, E., Becerra Córdova, L. E. and Villegas González, E. (2018). La satisfacción laboral y su influencia en la productividad. *Revista Latinoamericana de Investigación en Organizaciones, Ambiente y Sociedad, 9*(13), 129-153. https://doi.org/10.33571/teuken.v9n13a5

Wang, P., Chu, P., Wang, J., Pan, R., Sun, Y., Yan, M., Jiao, L., Zhan, X. and Zhang, D. (2020). Association between job stress and organizational commitment in three types of chinese university teachers: mediating effects of job burnout and job satisfaction. *Front. Psychol., 11*, 1-12, 576768, https://doi.org/10.3389/fpsyg.2020.576768

Warr, T., Cook, P. and Wall, K. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. *J. Occup. Psychol,. 52*(2), 129-148. https://doi.org/10.1111/j.2044-8325.1979.tb00448.x

Yin, H., Huang. S. and Chen, G. (2019). he relationships between teachers' emotional labor and their burnout and satisfaction: A meta-analytic review, *Educational Research Review, 28,* 1-18, 100283, https://doi.org/10.1016/j.edurev.2019.100283

Zhenga, W., Yang, B. and McLean, G. N. (2010). Linking organizational culture, structure, strategy, and organizational effectiveness: Mediating role of knowledge management. *Journal of Business Research, 63*(7), 763-771. https://doi.org/10.1016/j.jbusres.2009.06.005

University students' perception of the entrepreneurial ecosystem and social entrepreneurial intention

Methodology
A quantitative methodological approach was used, through inferential statistical data processing techniques such as: one-way ANOVA variance test, Student's t-test and Pearson correlation, which allow to know the significant differences and the relationship between the variables under study.

Objective
To analyze the perception of university students regarding the university entrepreneurial ecosystem and the social entrepreneurial intention, as well as the relationship between the two variables and their significant differences.

Introduction
Social entrepreneurship is an alternative to satisfy needs that have not yet met. A clear exponent of the entrepreneurial spirit is the youth, a main reason for the academia to be involved in developing the competencies and skills that foster it.

Result or conclusion 1
This research allows to confirm and demonstrate fundamental aspects to be considered for the creation of university educational policies that enable the development of competencies and the use of opportunities, consolidating a social entrepreneurial culture for the youth

Results or conclusion 2
From a gender perspective, the results show that women studying at the University of Cuenca have more social entrepreneurial intentions and a greater perception of the university social entrepreneurial ecosystem than men.

Result or conclusion 3
This research shows that the social return is higher in cities where their public universities are placed in better positions within the ranking

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University students' perception of the entrepreneurial ecosystem and social entrepreneurial intention

Percepción de estudiantes universitarios frente al ecosistema emprendedor y la intención emprendedora social

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Abstract: *entrepreneurship today has become a priority to promote the sustainability of countries. According to the Global Entrepreneurship Monitor, Ecuador is the country with the highest level of entrepreneurship in Latin America. Specifically, social entrepreneurship has gained momentum as an alternative to satisfy needs that have not been addressed at the governmental level. In this context, the article analyzes the relationship and the significant differences between the entrepreneurial ecosystem and the social entrepreneurial intention of the students of the University of Cuenca; using the variables gender and faculties as transversal treatment. To meet this objective, the sample was constituted by 856 students, which was filtered, generating a robust sample of 543 students. The analysis of results used inferential statistical techniques such as: ANOVA one way, Student´s t test and Pearson correlation, showing that there are no significant differences by sex in the students´ perception of the entrepreneurial ecosystem and the social entrepreneurial intention. In addition, students consider that the entrepreneurial ecosystem differs among the twelve faculties, identifying the faculty of Dentistry and faculty of Arts with a suitable ecosystem compared to the perception that more intervention is required in the ecosystem of the faculty of Philosophy and faculty of Law. Finally, the positive relationship between the two variables is an indicator that should be worked on in strategies to promote the social entrepreneurial culture at the university.*

Keywords: entrepreneurship, social entrepreneurship, entrepreneur, entrepreneurial ecosystem, social entrepreneurial intention, higher education, young university students, gender focus.

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Resumen: el emprendimiento se ha convertido en una prioridad para promover la sostenibilidad de los países. De acuerdo al Global Entrepreneurship Monitor, Ecuador es el país con mayor nivel de emprendimiento en América Latina. Específicamente, el emprendimiento social ha tomado impulso como alternativa para satisfacer necesidades que no han sido atendidas a nivel gubernamental. En este contexto, el artículo analiza la relación y las diferencias significativas entre el ecosistema emprendedor y la intención emprendedora social de los y las estudiantes de la Universidad de Cuenca, utilizando las variables sexo y facultades como tratamiento transversal. Para cumplir este objetivo se trabajó con una muestra representativa de 856 estudiantes, que fue depurada, generando una muestra robusta de 543 estudiantes. En el análisis de resultados se utilizó técnicas de estadística inferencial como: prueba de varianza ANOVA una vía, prueba T student y correlación Pearson, que muestran que no existen diferencias significativas por sexo en la percepción del estudiantado frente al ecosistema emprendedor y la intención emprendedora social. Además, consideran que el ecosistema emprendedor difiere entre las doce facultades, identificando a las facultades de Odontología y Artes con un ecosistema adecuado frente a la percepción de que se requiere mayor intervención en el ecosistema de las facultades de Filosofía y Jurisprudencia. Finalmente, la relación positiva entre las dos variables demuestra la necesidad de trabajar en estrategias que impulsen la cultura emprendedora social en la universidad.

Palabras clave: emprendimiento, emprendimiento social, emprendedor, ecosistema emprendedor, intención emprendedora social, educación superior, jóvenes universitarios, enfoque de género.

Introduction

Entrepreneurship has become relevant given the social, economic and environmental crisis facing the world, as an alternative to mitigate the lack of opportunities, unemployment, inequality and exclusion. Entrepreneurship involves transforming a new idea into an innovative business, through the management of skills, the development of creativity, persistence and exposure to risk. In this way, it affects the economic, social justice and respect for nature (Díaz Bretones and Lejarriaga Pérez de Las Vacas, 2018).

Entrepreneurship is seen as "the attitude in people, a culture and capacity in companies and a characteristic of the environment" (Suárez-Daza, 2014). Specifically, at the individual level, the factors to consider entrepreneurship are "the level of education, skills, abilities to identify opportunities, preferences for risk and psychological resources" (Suárez-Daza, 2014). All of them can be developed in the educational ecosystem. Meanwhile, at the intermediate and macro level, it is essential to develop an entrepreneurial culture, the recognition of the closest context and the understanding of the environment in which it develops, in order to generate a collective identity (Suárez-Pineda *et al.*, 2018).

This premise enables considering entrepreneurship as a process that allows innovating and creating, identifying opportunities to build new services, products, production methods, business models, etc. It is an alternative to transform realities through the creation of social value with innovation, seeking to ensure the common good.

To have an approach to the concept of social entrepreneurship, the premises of Michael Young are considered, who addressed the idea of social entrepreneurship between 1950 and 1990, however, in the late 90's, Bill Drayton founder of Ashoka, popularized this term (Saavedra-García *et al.*, 2020), which was adopted to designate forms of organization to implement innovative, creative and sustainable solutions to social problems.

Social entrepreneurship characterizes by its impact on social and economic development because the collective social construction, along to the actions of the State, seeks to respond to the problems of society by creating sustainable social value (Guzmán and Trujillo, 2008). Therefore, social entrepreneurship revolves around social renewal, creativity and innovation.

Several authors have conceptualized social entrepreneurship; hence, some conceptualizations are presented below to propose a holistic concept that involves different perspectives.

From the analysis of these concepts, it is evident that social entrepreneurship involves elements such as social value, innovation and creativity, search for opportunities, social change, risk acceptance, solution of social problems, guarantee of the common good, satisfaction of shared needs and economic sustainability. In this regard, Saavedra García *et al.* (2020) define social entrepreneurship as:

(…) a process that pursues the social mission of developing goods and services to meet the needs of the less favored people (social value creation); seeks innovative solutions that have not been applied and generates projects to carry them out and in many cases with no cost (social innovation); efficiently manages financial, human and material resources in order to generate financial profit (financial sustainability); seeks and takes advantage of opportunities to solve social needs to establish a social balance (social vision), and assumes risks by developing projects that initially will not be profitable (social profitability). (p. 20)

Table 1

Conceptualization of social entrepreneurship

Authors	Definition of social entrepreneurship
Chell (2007)	It is a process that allows creating and taking advantage of opportunities, considering controlled alienable resources, oriented to the generation of wealth that can be reinvested to ensure its sustainability, and social value.
Thompson (2008)	It is an entrepreneurial activity characterized by its intention and social orientation.
Austin *et al.* (2012)	Innovative activity with social value, developed in the non-profit sector.
Fournier (2011)	"…any action committed by a social group to satisfy a need shared by all members of the group and for which each member is willing to pool and share the resources that make possible the conduction of the goal" (p.12).
Pérez-Briceño *et al.* (2017)	"…its objective is to provide a solution to a social problem in those sectors of the economy and state action are ineffective and the social entrepreneur is a non-profit organization" (p.7).
Cantillo-Campo *et al.* (2021)	"(…) is any action, initiative in the socioeconomic sphere of a nation aimed at satisfying the needs of the community, to ensure the common good of the population" (p. 218).

Note. Table constructed from the premises of (Chell, 2007; Thompson, 2018; Fournier, 2011; Austin *et al.*, 2012; Pérez Briceño *et al.*, 2017).

According to the concepts of social entrepreneurship described above, this research conceptualizes it as a strategy of innovation and creativity that seeks opportunities to generate services or products that help meet the needs of society and, in this way, improve their living conditions.

Social entrepreneurship involves people with diverse characteristics, expressed from different perspectives. From psychology, they are considered individuals whose behaviors, virtues and values take them to self-realization and entrepreneurship by taking risks. The classical school emphasizes their innovative abilities. Business management highlights their abilities to plan, organize and motivate. From a leadership approach, their qualities and abilities to seize opportunities and assume risks are visible (Leoro and Farfán, 2017). For Saavedra García *et al.* (2020), the social entrepreneur characterizes by his or her vocation, vision and social ethics; he or she ventures as an agent of change because he or she creates values and assumes risks to generate social changes. In addition, he/she identifies opportunities and resources to innovate; has the ability to manage, through the development of democratic leadership, facilitating the construction of social capital.

Based on these concepts, entrepreneurs are considered potentially innovative when it comes to generating new ideas and putting them into action. They are characterized by identifying opportunities, taking risks, projecting themselves communally, by their social vocation, by the development of synergies, by being persistent, visionary and pragmatic.

On the other hand, the analysis of social entrepreneurship from a gender perspective shows that gender is a conditioning factor of entrepreneurship, since women and men have different preferences, behaviors, motivations, competencies and skills when it comes to entrepreneurship. However, women have difficulties in entrepreneurship due to the social construction of gender and the

assigned roles that generate inequalities and limit their full participation (Portillo and Millán, 2016).

For Gálvez and Suárez (2019), women's entrepreneurial intentions are influenced by their family role, driving them to be entrepreneurs motivated by necessity or by the lack of job opportunities. Hence, entrepreneurship represents a job opportunity that allows them to find a balance between family and work life. Accordingly, Braches and Elliott (2017) state that entrepreneurship generates self-employment for women, contributing to their economic empowerment and covering family needs.

Women's entrepreneurship is generally framed within emerging economies that face adverse contexts, where their participation is limited by multiple barriers such as access to and use of financial, economic, educational, training and advisory resources needed to start, strengthen, enhance and sustain their enterprises (CLADEA, 2018).

Therefore, there is an urgent need to reformulate the dynamics of inequality that are evidenced in asymmetrical structural power relations that limit equal opportunities between genders in the different aspects of life. In this context, education is considered an essential strategy to generate structural transformations to promote the fulfillment of the rights of human beings, without any discrimination whatsoever.

Hence, it is necessary to analyze the role of the education system in the formation of professionals that respect differences, diversity and equal opportunities, endowed with knowledge that leads to face uncertainties, to take risks and decisions to live in society, forging a life project through the achievement of shared knowledge that leads to a dignified coexistence and a happy life (Cadena, 2020).

From this perspective and to favor social entrepreneurship, it is necessary to influence the construction of entrepreneurial environments, where there are laws, regulations and policies, investments and human talent that facilitate the transformation of ideas into valuable products and services (Campo-Ternera *et al.*, 2019).

The university has a major impact on the development of entrepreneurial intention and behavior and on the acquisition of competencies, skills and abilities that allow entrepreneurship. For this reason, university education should promote an entrepreneurial ecosystem that articulates "knowledge in a recursive way, learning-unlearning-relearning" (Cadena, 2020), to respond to the interests and needs of students, with the aim of building equitable and egalitarian relationships.

From this perspective, higher education is a strategic ally through the development of an entrepreneurial ecosystem defined as "the dynamic, institutionally integrated interaction between attitudes, skills and entrepreneurial aspirations of individuals, driving the allocation of resources through the creation and operation of new businesses" (GEI Report, 2019). It is in this context in which this research takes place, having as object of study a higher education institution, the University of Cuenca, to analyze the perception of students regarding the university entrepreneurial ecosystem and the social entrepreneurial intention; as well as the relationship between the two variables and the existing significant differences, using inferential statistical techniques that demonstrate the need to work and promote strategies to promote social entrepreneurial culture at the university.

Therefore, the entrepreneurial ecosystem is a complex system, due to the interaction of its six interrelated components, which, according to Ali *et al.* (2021), constitute strategic areas of entrepreneurship: financing, which refers to the access and availability of resources that facilitate the creation or strengthening of entrepreneurship. Innovation refers to the ability and capacity to innovate and develop new entrepreneurial ideas (AEI, 2014).

Culture, norms that affect the development of entrepreneurial capabilities are based on the opportunities generated in the localities (Ács *et al.*, 2014). Advice and support are components that provide support and assistance from various actors who with their knowledge, experience, contact networks and investment contribute to the entrepreneur and promote entrepreneurship (AEI, 2014). The regulatory and market framework is constituted by the set of laws, decrees, ordinances and regulatory framework that encourage and protect entrepreneurship (AEI, 2014). Finally, the human talent that with knowledge, skills and abilities, developed from the impact of

the educational system, local culture and social conditions, create and develop innovative ideas for entrepreneurship (Weinberger, 2019).

Out of these components, the study delves into human capital, which corresponds to skilled and unskilled labor, family qualifications, and specific training in entrepreneurship, as it is an essential element for creating an entrepreneurial ecosystem. Therefore, the educational system becomes the engine for social entrepreneurial training because of its impact on the promotion, preparation and motivation for entrepreneurship, i.e., for motivating "the self-recognition of the conviction to create a business and the conscious planning for its conduction in a future time" (Soria-Barreto *et al.*, 2016, p. 26) known as entrepreneurial intention. From this perspective, Adekiya and Ibrahim (2016), consider that to foster entrepreneurial intention, it is necessary to promote perceived appropriateness and effectiveness, as well as to improve the quality of entrepreneurial training facilities in education.

There are several models to measure entrepreneurial intention, among them, the construct proposed by Icek Ajzen in 1991, which is based on the proposal of the theory of planned behavior (TPB). For this author, entrepreneurial intention can be predicted from "attitude", "perceived behavioral control or self-efficacy" and "subjective norms" (Ajzen, 1991, p.179). This model explains the perception interaction of perceived control, subjective norms and personal attraction and their influence on intention, allowing a more accurate measurement of entrepreneurial behavior (Siles-Nates, 2020). Authors such as Liu, Kulturel-Konak and Konak (2021), propose a model based on methodological triangulation that allows measuring the effectiveness of entrepreneurship education from three dimensions, competencies, barriers and entrepreneurial intentions. However, Icek Ajzen's model is chosen for this study.

Accordingly, the results of the study conducted by Guerrero and Santamaría (2020) show the importance of the educational, governmental, scientific and financial bodies that make up the entrepreneurial ecosystem in motivating entrepreneurial activities. They also identify the fact of possessing knowledge and skills, having reference models, identifying business opportunities, seeking social equity and social and economic

status through entrepreneurship. On the other hand, Padilla-Angulo (2019), states that "the value of student associations to increase EI (…) through their impact on entrepreneurial attitudes are fundamental in the formation of EI" (p. 45). This is relevant information for both academia and institutions to promote entrepreneurship.

Materials and Method

The study is quantitative, using data processing techniques of inferential statistics, which allow to know the significant differences and the relationship of the entrepreneurial ecosystem and the social entrepreneurial intention of university students under study.

The unit of analysis is defined as the students of the University of Cuenca enrolled during the cycle March/2019 to August/2019, from fifth to tenth cycles onwards, delimiting a population of 3757 students. Being a large population, it was decided to work with a sample, based on the following factors: confidence level of 95 %, permissible margin of error of 2.94 %, standardized proportion of success and failure of 50 %, determining a sample size of 856 students (368 men and 488 women). The sampling method applied was stratified random with proportional allocation by sex of students and faculties in which they are enrolled to consider their heterogeneity.

In the process of debugging the database, it was determined that 36.57 % of the cases have at least one missing data in the Likert scale questions of the components of the investigated social entrepreneurship axis in which the entrepreneurial ecosystem and social entrepreneurial intention variables are found. This makes it impossible to apply the dimension reduction technique (factor analysis by principal components) directly, because the linear combination of the association of the items discards the cases (rows) that have missing data; therefore, for the analysis of the data, the base must be purified, either by discarding or handling the missing cases. According to Van Der Ark and Vermunt (2010) a missing data handling method is applied, since ignoring the missing data problem could lead to statistically biased results and erroneous conclusions.

There are different procedures for handling missing data, generally grouped into traditional and modern methods (Baraldi and Enders, 2010). Cuesta *et al.* (2013), in their study called "Missing data and psychometric properties in personality tests", apply several techniques for treating these data, both traditional and modern, finding that the Expectation-Maximization (EM) method achieves a better overall fit compared to the other criteria studied. For this reason, the EM method is used for treating the missing data of the items (questions) of the scales and subscales of the Social Entrepreneurship axis.

The EM algorithm is a two-step iterative process E and M to find maximum plausible estimators of the parameters of interest; this method consists of replacing missing values with estimated values, then estimating the parameters, re-estimating the missing values assuming that the new parameter estimates are correct, re-estimating the parameters and the missing values, and so on iterating until converging (Badler *et al.*, 2005).

For Badler *et al*. (2005) the use of the EM method requires the fulfillment of two assumptions: 1) the use of categorical or quantitative variables and 2) that the assumption of randomness of the data is fulfilled, i.e., that the missing data are completely random or MCAR, since failure to comply with this assumption would imply biased estimates. In this context, the items that form the scale and subscales of the Social Entrepreneurship axis are all Likert-scaled, fulfilling the first assumption. The second assumption is tested by contrasting Little's hypothesis in the SPSS program vs. 21.

After testing the assumptions, the missing data analysis is performed in the SPSS vs. 21 program for all the Likert scale items that explain the dimensions of the Social Entrepreneurship axis. This results in a complete database of 856 cases.

To check the robustness of the results, a database is generated by discarding all the cases that have some missing value in the items of the scale and subscales of the investigated Social Entrepreneurship axis. This sub-sample is made up of 543 cases; if the initial parameters, N, Ni, Z, pi and qi were maintained for the calculation of the sample by means of stratified random sampling with proportional allocation, the sampling error for the sample of 543 students corresponds to 3.89 %.

In summary, there are two databases to analyze: (1) a sample of 856 cases, with missing data in the Likert scale questions on the variables of the Social Entrepreneurship component, and (2) a sample of 543 cleaned cases, with no missing data in the questions on the variables of the component of interest.

The survey was used as a tool for gathering information, and it was composed of several sections, one of them the Social Entrepreneurship axis; the questionnaire validated from the various theories of entrepreneurship was used, and was systematized and coupled by the project "Potential for Social Entrepreneurship in Latin America" carried out by the Research Institute of the Faculty of Administrative Sciences of Universidad San Martin de Porres (USMP, 2017) Lima-Peru. In addition, the questions of this questionnaire were revised and the terminology was coupled to the student university context, to be applied in this research.

There are four variables used in this study, two observable variables: gender and faculty; and two latent variables "university entrepreneurial ecosystem" and "social entrepreneurial intention", which were generated from the confirmatory factor analysis by principal components in the SPSS vs.21 program. The first latent variable was made up of 9 Likert scale items (see Table 2), which allow analyzing the conditions of both the physical and relational environment, in which young students develop at the university for promoting their social entrepreneurial skills; this scale is based on the study by Lürthje and Franke (2004), translated into Spanish by Álvarez *et al.* (2018), cited by Giraldo Mejía and Vara Horna (2018). The second "Social Entrepreneurial Intention" groups five Likert scale items (see Table 3), and analyzes the real motivation for the practical social entrepreneurial application by the unit of analysis, in this case young university students; this scale is based on Moriano (2005) and Liñán and Chen (2009), cited by Giraldo-Mejía and Vara-Horna (2018).

Table 2

Items about the university entrepreneurial ecosystem

Question/item	Likert Scale
1. School partnerships train university social entrepreneurs in financial, organizational, academic and technical aspects.	
2. School partnerships promote networking between university social entrepreneurs and public and private institutions.	
3. Is it a favorable environment for developing social entrepreneurship fostered among university leaders?	
4. Do student leaders promote ideas and/or spaces for social entrepreneurship?	
5. Do school associations or university departments have support programs for the creation of social enterprises (financial support, institutional support, academic endorsements, etc.)?	Never Rarely Sometimes Regularly Always
6. In the school or department associations of the university, is there support from the main representative to initiate social ventures?	
7. Are there spaces (trainings, courses, etc.) related to social entrepreneurship in the school associations or university departments?	
8. Do school or university department associations promote spaces for internships in social entrepreneurship (projects, management models, internships, research internships, etc.)?	
9. Do the school associations or university departments have physical spaces and specialized personnel that support and provide advice in the planning and execution of social enterprises?	

Note. Questions coupled to the university context on the questionnaire validated from the various theories of entrepreneurship, compiled by the project "Potential for Social Entrepreneurship in Latin America", conducted in 2017 by the Research Institute of the Faculty of Administrative Sciences of Universidad San Martín de Porres, Lima-Peru, based on the study by Lürthje and Franke (2004), translated into Spanish by Álvarez, López and Chafloque (2018), cited by Giraldo Mejía and Vara Horna (2018).

Table 3

Items about social entrepreneurship intention

Question/item	Likert Scale
1. Have you ever considered developing a social enterprise?	*For items 1, 3 and 4:* *Never* *Rarely* *Sometimes* *Regularly* *Always*
2. Do you plan to develop a social entrepreneurship initiative that addresses the social problems of your family, organization, region or community?	
3. Do you recommend your peers to develop social entrepreneurship initiatives that seek to solve collective problems in their environment?	
4. Will your proposed future venture initiatives prioritize social rather than financial benefits?	*For items 2 and 5:* *Strongly disagree* *Disagree* *Neither agree nor disagree* *Agree* *Strongly agree*
5. If the opportunity and resources were available, would you undertake a social enterprise?	

Note. Questions coupled to the university context on the questionnaire validated from the various theories of entrepreneurship, compiled by the project "Potential for Social Entrepreneurship in Latin America", executed in 2017 by the Research Institute of the Faculty of Administrative Sciences of Universidad San Martín de Porres, Lima-Peru, based on the study of Moriano (2005) and Liñán and Chen (2009), cited by Giraldo-Mejía and Vara-Horna (2018).

Before continuing with the research results, Table 4 presents the reliability and validity indicators of the construct of the latent variables under study. It is evident that the results are satisfactory because the Kaiser-Meyer-Olkin (KMO) indices are very good, higher than 0.80, proving that a factor analysis with the sample information is pertinent; in addition, it is contrasted that the correlation matrix between the items that form each component variable do not form identity matrices by means of Bartlett's test of sphericity. Likewise, the percentages of average variance extracted (AVE) of each factor in the two samples are very good, higher than 50 %, as recommended by authors such as Merenda (1997), Chin (1998) and Detrinidad (2018).

Regarding the reliability of the component variables in the two samples, reliable indicators are also observed, since the Cronbach's Alpha and Composite Reliability coefficients are higher than 0.70 according to Cortina (1993) and Prieto and Delgado (2010), respectively. The Alpha coefficient and composite reliability are statistics for measuring the internal consistency of the factors, with the difference that the latter considers the presence of other factors being analyzed in a study.

Table 4

Reliability and validity of the university entrepreneurial ecosystem and social entrepreneurial intention variables

Purified base (n1=543)						
Variables	**KMO**	**Bartlett. Sig.**	**Factor loadings (range)**	**Variance extracted AVE**	**Alpha Cronbach**	**Composite Reliability**
University EntrepreneJurial Ecosystem	0.933	0.000	0.818-0.882	73.162	0.954	0.961
Social Entrepreneurial Intention	0.845	0.000	0.781-0.852	65.106	0.863	0.903
Imputed basis (n2=856)						
University Entrepreneurial Ecosystem	0.938	0.000	0.822-0.877	73.778	0.955	0.962
Social Entrepreneurial Intention	0.827	0.000	0.755-0.843	61.962	0.844	0.890

Note. Table constructed from the database of the questionnaire on Social Entrepreneurship and Leadership, collected in the framework of the research project "Social Leaders and Young University Students Transforming Realities. Explanatory analysis of their social entrepreneurial profile", to young university students of University of Cuenca-Ecuador, period March-August 2019, n1=543 and n2=856.

All analyses were processed using the Statistical Package for the Social Sciences (SPSS) version 21 software. Inferential statistical techniques are used for the presentation and analysis of results, applying the Student's t-test for independent samples in the analysis of differences in the university entrepreneurial ecosystem and the social entrepreneurial intention of students, in which the sex variable is the cross-sectional variable (independent variable) and the main variables of analysis are the ecosystem and the social entrepreneurial intention (dependent variables). Likewise, the significant differences in the main construct variables mentioned above are presented according to the treatment variable faculties, using the one-way ANOVA variance test. Finally, the relationship between the university entrepreneurial ecosystem and social entrepreneurial intention is presented and analyzed using Pearson's correlation coefficient, presenting the results in a cross-sectional way through the variable gender and faculties.

Results

Significant differences in the entrepreneurial ecosystem and social entrepreneurial intention of students at the University of Cuenca, by gender and faculty

On average, female students have a higher level of "social entrepreneurial intention" $[\underline{x} = 3.63, s = 0.773; \underline{x} = 3.64; s = 0.756]$ than men $[\underline{x} = 3.55; s = 0.96; \underline{x} = 3.58; s = 0.891]$ both in the cleaned and imputed bases; however, with 95 % confidence there is not enough statistical evidence to affirm that the difference between the mean scores of men and women are different in the two samples $[t(433.09) = -1.025, p > 0.05; t(541) = -1.050, p > 0.05]$

(see Table 5), which means that it cannot be statistically affirmed that women have higher entrepreneurial intention than men.

Likewise, female students on average have a higher perception of the "university entrepreneurial ecosystem" $[\underline{x} = 2.27, s = 0.964; \underline{x} = 2.35, s = 1.007]$ than men $[\underline{x} = 2.18, s = 0.944; \underline{x} = 2.30, s = 0.971]$, both in the cleaned and imputed bases; however, with 95 % confidence there is not enough statistical evidence to claim that the difference between the mean scores of men and women are different in the two samples $[t(541) = -1.050, p > 0.05; t(854) = -0.769, p > 0.05]$; therefore, it cannot be statistically affirmed that women have a higher perception level of the university entrepreneurial ecosystem compared to men.

Table 5

Demographic profile by gender of mean entrepreneurial ecosystem scores and social entrepreneurial intention of young university students

Sex	Purified base			Imputed base		
	Entrepreneurial Intention					
	Media	Desv.	Dif. of averages	Media	Desv.	Dif. of averages
Man	3.55	0.9603	-0.079	3.58	0.8913	-0.057
Woman	3.63	0.7734		3.64	0.7563	
Levene's test	9.438	Sig.= 0.002		7.871	Sig.= 0.005	
Test t*	-1.025	Sig. (bilateral)=0.306; gl=433.088		-0.987	Sig. (bilateral)=0.324; gl=714.885	
Effect size (r)	0.049			0.037		
	University entrepreneurial ecosystem					
Man	2.18	0.9442	-0.087	2.30	0.9706	-0.053
Woman	2.27	0.9636		2.35	1.0074	
Levene's test	0.002	Sig.=0.962		0.287	Sig.=0.592	
Test t	-1.050	Sig. (bilateral)=0.294; gl=541		-0.769	Sig. (bilateral)=0.442; gl=854	
Effect size (r)	0.045			0.026		

Note. Table constructed from the database of the questionnaire on Social Entrepreneurship and Leadership, collected in the framework of the research project "Social Leaders and Young University Students Transforming Realities. Explanatory analysis of their social entrepreneurial profile" to young university students of the University of Cuenca-Ecuador, period March-August 2019, n1=543 and n2=856.

On the other hand, if evaluating the mean scores of the latent variables under study with respect to faculties, there are no statistically significant differences in the mean scores of "social entrepre-

neurial intention" among the students of the 12 faculties of the university; this result is consistent both in the cleaned base and in the imputed base $[F(542) = 1.427, p > 0.05; F(714.885) = -0.987, p > 0.05]$; in other words, this means that it cannot be statistically affirmed that students from the Faculty of Agricultural Sciences have more social entrepreneurial intention than students from the other faculties of the University of Cuenca.

On the contrary, it is found with 95 % confidence that there are statistically significant differences between the mean scores of the variable "university entrepreneurial ecosystem" between the different faculties of the university in the two samples. The results are consistent with the robust tests of equality of means: Brown-Forythe $[BF(330.95) = 2.498, p < 0.05; BF(539.17) = 2.619, p < 0.05]$ and Welch $[W(145.93) = 2.591, p < 0.05; W(232.19) = 2.593, p < 0.05]$; these robust tests are applied, since the assumption of equality of variances between the populations of the categorical variable "faculties" of the one-way ANOVA test is not met (see Table 6).

After testing the statistically significant difference in the mean scores of the latent variable "university entrepreneurial ecosystem", the students of the Faculty of Dentistry perceive a higher level of entrepreneurial ecosystem in their faculty $[\underline{x} = 2.66, s = 0.9488; \underline{x} = 2.75, s = 1.033]$, compared to the students of the faculty of Philosophy, Letters and Educational Sciences $[\underline{x} = 1.89, s = 0.7958; \underline{x} = 2.08, s = 0.945]$ who are the ones who report a lower entrepreneurial ecosystem score in their faculty.

At a general level, the mean perception scores of the entrepreneurial ecosystem by students of the different faculties of the university are low, between 2.66 -1.89 and 2.75-2.08, i.e., if compared to the Likert scale used it means that "almost never-rarely" they perceive an entrepreneurial environment in their faculties. In other words, students of the University of Cuenca perceive a low level of entrepreneurial ecosystem $[\underline{x} = 2.23, s = 0.9554; \underline{x} = 2.33, s = 0.992]$, i.e., they rarely perceive a university environment that encourages them to be entrepreneurial.

Table 6

Educational profile in the entrepreneurial ecosystem and social entrepreneurial intention of young university students

Faculty	Purified base		Imputed base	
	Social Entrepreneurial Intention			
	Media	Desv.	Media	Desv.
Faculty of Agricultural Sciences	3.93	0.8602	3.94	0.8255
Faculty of Hospitality Sciences	3.88	0.9298	3.82	0.7931
School of Economics and Administrative Sciences	3.67	0.7712	3.66	0.7307
Faculty of Psychology	3.67	0.8522	3.70	0.7805
Faculty of Medical Sciences	3.59	0.8273	3.67	0.8391
Faculty of Jurisprudence and Political and Social Sciences	3.57	0.8172	3.60	0.8097
Faculty of Philosophy, Letters and Educational Sciences	3.54	1.0153	3.54	0.8805
Faculty of Arts	3.52	0.9078	3.61	0.7952
Faculty of Chemical Sciences	3.51	0.8495	3.55	0.8075
Faculty of Architecture and Urban Planning	3.50	0.8852	3.50	0.7980
School of Dentistry	3.43	0.7521	3.31	0.6437
School of Engineering	3.32	0.8135	3.32	0.7872

	3.60	0.8583	3.62	0.8170
Levene's test	0.257	Sig.= 0.993	0.452	Sig.=0.932
Test F (ANOVA)*	1.427	Sig. (bilateral)= 0.156; gl=542	-0.987	Sig. (bilateral)= 0.324; gl=714.885
Effect size (n)	0.029		0.029	
University entrepreneurial ecosystem				
School of Dentistry	2.66	0.9488	2.75	1.033
Faculty of Arts	2.64	1.0209	2.74	0.984
Faculty of Psychology	2.59	0.8398	2.59	0.861
Faculty of Hospitality Sciences	2.58	1.0229	2.60	1.034
Faculty of Architecture and Urban Planning	2.49	1.0146	2.44	0.871
Faculty of Agricultural Sciences	2.40	1.1777	2.47	1.223
School of Economics and Administrative Sciences	2.24	0.9577	2.33	0.907
Faculty of Medical Sciences	2.19	0.9474	2.31	1.062
Faculty of Chemical Sciences	2.17	0.7986	2.23	0.834
School of Engineering	2.05	0.9204	2.26	0.963
Faculty of Jurisprudence and Political and Social Sciences	1.99	0.9479	2.10	1.032
Faculty of Philosophy, Letters and Educational Sciences	1.89	0.7958	2.08	0.945
	2.23	0.9554	2.33	0.992
Levene's test	1.853	Sig.= 0.043	3.456	Sig.= 0.000
Test F (ANOVA)				
Brown-Forsythe test)	2.498	Sig. = 0.005; gl=330.95	2.619	Sig. = 0.003; gl=539.17
Welch's test	2.591	Sig. = 0.005; gl=145.93	2.593	Sig. = 0.004; gl=232.19
Effect size (n)	0.051		0.033	

Note. Table constructed from the database of the questionnaire on Social Entrepreneurship and Leadership, collected in the framework of the research project "Social Leaders and Young University Students Transforming Realities. Explanatory analysis of their social entrepreneurial profile" to young university students of the University of Cuenca-Ecuador, period March-August 2019, n1=543 and n2=856.

Relationship between the university entrepreneurial ecosystem and social entrepreneurial intention, according to gender

In the analysis of the relationship between the university entrepreneurial ecosystem and social entrepreneurial intention, a statistically positive linear relationship is found between the latent variable "university entrepreneurial ecosystem" and "social entrepreneurial intention" of students at the University of Cuenca $(\rho = 0.125, p < 0.05; \rho = 0.119, p < 0.05)$. However, according to Cohen (1988), cited in Hernández *et al.* (2018), the correlation is weak, meaning that the X and Y observations are offset by the corresponding mean values $\underline{x}, y$.

Likewise, at a more disaggregated level, by gender, a statistically positive linear relationship is found between the entrepreneurial intention of female students and their perception of the entrepreneurial ecosystem within the university. In contrast, no statistically positive linear rela-tionship is found between the entrepreneurial intention of male students and their perception of the university entrepreneurial ecosystem. The results are consistent across the two databases analyzed (see Table 7).

Table 7

Correlation between the entrepreneurial ecosystem and social entrepreneurial intention of young university students by gender

Sex	Purified base			Imputed base		
	Social entrepreneurship intention / University entrepreneurial ecosystem					
	Pearson correlation	Sig. (bilateral)	N	Pearson correlation	Sig. (bilateral)	N
Men	0.07	0.270	232	0.09	0.090	368
Women	0.171***	0.002	311	0.144***	0.001	488
	0.125***	0.003	543	0.119***	0.000	856

***. The correlation is significant at the 0.01 level (bilateral).

Note. Table constructed from the database of the questionnaire on Social Entrepreneurship and Leadership, collected in the framework of the research project "Social Leaders and Young University Students Transforming Realities. Explanatory analysis of their social entrepreneurial profile" to young university students of the University of Cuenca-Ecuador, period March-August 2019, n1=543 and n2=856.

Regarding the analysis of the relationship between the university entrepreneurial ecosystem and social entrepreneurial intention, according to faculties, it is found that not in all faculties the students' perception of their social entrepreneurial intention and the university entrepreneurial ecosystem have a statistically significant positive linear relationship. In other words, it means that in many faculties there is no evidence of a positive linear relationship between these two important variables related to social entrepreneurship (see Table 8), and even inverse associations are found, which should be analyzed in more detail in future research.

In the Faculty of Architecture, a statistically significant moderate positive relationship is found at 90 % in the first base and at 95 % in the second base $(\rho = 0.30, p < 0.10; \rho = 0.32; p < 0.05)$. Likewise, a weak linear relationship is found in the faculty of Economic Sciences $(\rho = 0.25, p < 0.05; \rho = 0.18, p < 0.10)$, significant at 95 % in the first base and at 90 % in the second. Similarly, a strong linear relationship is found in the faculty of Dentistry which is sta-tistically significant at 95 % in the first base $(\rho = 0.80, p < 0.05)$ and a moderate linear relationship statistically significant at 90 % in the second base $(\rho = 0.40, p < 0.10)$ is found. Similarly, a statistically significant moderate linear relationship is found in the faculty of Chemical Sciences in the first base $(\rho = 0.33, p < 0.05)$ and a statistically significant weak linear relationship in the second base $(\rho = 0.23, p < 0.05)$.

A similar result is found in the Faculty of Arts, since there is no evidence of a statistically significant linear relationship in the first base, while a statistically significant moderate linear relationship is determined in the base with imputed data $(\rho = 0.37, p < 0.05)$. On the contrary, a statistically significant negative linear relationship at 95 % is found in the Psychology faculty in the first base $(\rho = -0.52, p < 0.05)$ and at 90 % in the second base $(\rho = -0.31, p < 0.10)$. This result is opposite to that indicated by the theory, which should be treated very carefully, since the significance level of this relationship decreases as the sample size increases.

Table 8

Correlation between the entrepreneurial ecosystem and social entrepreneurial intention of young university students, by faculty

Faculty	Purified base			Imputed base		
	Entrepreneurial intention / University entrepreneurial ecosystem					
	Pearson correlation	Sig. (bilateral)	N	Pearson correlation	Sig. (bilateral)	N
Architecture and Urban Planning	0.30*	0.096	31	0.32**	0.026	49
Arts	0.30	0.227	18	0.37**	0.033	33
Agricultural Sciences	0.19	0.201	45	0.17	0.201	57
Hospitality Sciences	-0.23	0.282	23	-0.11	0.492	45
Economic and Administrative Sciences	0.25**	0.046	64	0.18*	0.084	92
Medical Sciences	0.01	0.948	115	0.06	0.438	179
Chemical Sciences	0.33***	0.003	78	0.23***	0.010	123
Philosophy, Letters and Educational Sciences	0.16	0.260	51	0.14	0.136	111
Engineering	0.03	0.871	34	0.02	0.906	49
Jurisprudence and Political and Social Sciences	-0.07	0.659	46	-0.02	0.875	61
Dentistry	0.80***	0.001	13	0.40*	0.074	21
Psychology	-0.52***	0.008	25	-0.31*	0.066	36

***. Correlation is significant at the 0.01 level (bilateral); **. Correlation is significant at the 0.05 level (bilateral); *. Correlation is significant at the 0.10 level. (bilateral).

Note. Table constructed from the database of the questionnaire on Social Entrepreneurship and Leadership, collected in the framework of the research project "Social Leaders and Young University Students Transforming Realities. Explanatory analysis of their social entrepreneurial profile", to young university students of the University of Cuenca-Ecuador, period March-August 2019, n1=543 and n2=856.

Finally, in the faculties of Agricultural Sciences, Hospitality Sciences, Medical Sciences, Philosophy, Letters and Educational Sciences, Engineering and Jurisprudence, and Political Sciences, there is no evidence of a positive linear relationship between the social entrepreneurial intention of students and their perception of the entrepreneurial ecosystem forged in their faculty and at the university.

Conclusions and discussion

This research allows to confirm and demonstrate some fundamental aspects to consider for creating university educational policies that enable the development of competencies and the use of business opportunities, which help to consolidate a robust social entrepreneurial culture for the youth of our country, as well as for the State.

The results of the analysis from a gender perspective show that women studying at the University of Cuenca have greater social entrepreneurial intentions and more perception of the university social entrepreneurial ecosystem than men; however, these differences are not statistically significant.

It is also evident that there are no statistically significant differences in the mean scores of the social entrepreneurial intention of students of the twelve faculties of the University of Cuenca; on the contrary, statistically significant differences are found between the mean scores of the social

entrepreneurial ecosystem by faculties, especially in the faculties of Dentistry, Arts and Psychology, where students perceive a greater generation of spaces (ecosystem) for social entrepreneurship; the opposite is observed in the perception of students of the Faculty of Philosophy, Letters and Educational Sciences.

The data agree with the results of the study conducted by Garavito *et al.* (2021), who consider university education as a key factor for developing competencies that influence entrepreneurial intention, especially among female students, who have entrepreneurial behaviors that contribute to their individual, social and collective empowerment. Significant differences in entrepreneurial intention by faculties are also observed. However, in the aforementioned study, greater entrepreneurial intention is observed in female students attached to the faculty of Economics and Administrative Sciences.

On the other hand, the study confirms the existence of a statistically positive linear relationship between the latent variable "university entrepreneurial ecosystem" and the "social entrepreneurial intention" of university students. The data are consistent with the research conducted by Mora *et al.* (2019) who point out that the appropriate university ecosystem reinforces and motivates the intention to social entrepreneurship.

Furthermore, from the analysis disaggregated by faculties, it is found that there is no evidence of a positive linear relationship between the university entrepreneurial ecosystem and the social entrepreneurial intention in the faculties of Agricultural Sciences, Hospitality Sciences, Medical Sciences, Jurisprudence and Political Sciences, Philosophy, Letters and Educational Sciences and Engineering, i.e., not in all faculties the perception of students on their social entrepreneurial intention and the university entrepreneurial ecosystem have a significant positive linear relationship that demonstrates the incidence of the entrepreneurial ecosystem in a greater social entrepreneurial intention. These data motivate new research to deepen in the factors generated by these results and that commit us to apply qualitative methodologies to deepen in the feelings and needs of the students.

In short, the above results are conclusive in demonstrating that the efforts to positively impact the entrepreneurial intention of students are different in each faculty, showing that some faculties promote a better entrepreneurial environment than others.

One of the lessons learned from this result is the need for an articulated strategic work between the representatives of each faculty and the central administration to achieve positive results in the intention of social entrepreneurship of students, in which a culture of entrepreneurship is promoted, which in addition to training professionals with technical skills is capable of generating collective entrepreneurship processes that have a significant impact on the development of the localities and the country, both in the economic and social spheres.

Support

References

Ács, Z. J., Autio, E. and Szerb, L. (2014). National Systems of Entrepreneurship: Measurement issues and policy *implications. Research Policy, 43*(3), 476-494. https://doi.org/10.1016/j.respol.2013.08.016

Adekiya, A. A. and Ibrahim, F. (2016). Entrepreneurship intention among students. The antecedent role of culture and entrepreneurship training and development. *The International Journal of Management Education, 14*(2),116-132. https://doi.org/10.1016/j.ijme.2016.03.001

AEI (2014). Ecuador, un país Emprendedor e Innovador en el 2020. Estrategia para desarrollar un Ecosistema de Emprendimiento e Innovación. Alianza para el Emprendimiento e Innovación (AEI). https://bit.ly/2kYSwlz

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211. https://doi.org/https://doi.org/10.1016/0749-5978(91)90020-T

Ali, M. A., Kabil, M., Alayan, R., Magda, R. and David, L. D. (2021). Entrepreneurship ecosystem performance in egypt: An empirical study based on the global entrepreneurship index (gei). *Sustainability 13*(13) (Switzerland). https://doi.org/10.3390/su13137171

Austin, J., Stevenson, H. and Wei-Skillern, J. (2012). Social and commercial entrepreneurship: same, different, ¿or both? *Revista de Administração, 47*(3), 370-384. https://doi.org/10.5700/rausp1055

Badler, C. E., Alsina, S. M., Puigsubirá, C. R. and Vitelleschi, M. S. (2005). Información faltante en experimentos biológicos. Una solución mediante imputación múltiple a través del programa SAS. *FABICIB, 8*(1), 79-87. https://doi.org/https://doi.org/10.14409/fabicib.v8i1.736

Baraldi, A. N. and Enders, C. K. (2010). An introduction to modern missing data analyses. *Journal of School Psychology, 48*(1), 5-37. https://doi.org/10.1016/J.JSP.2009.10.001

Braches, B. and Elliott, C. (2017). Articulating the entrepreneurship career: A study of German women entrepreneurs. *International Small Business Journal: Researching Entrepreneurship, 35*(5), 535-557. https://doi.org/10.1177/0266242616651921

Cadena, L. F. (2020). El aporte del emprendimiento social a la educación media técnica. *Crescendo, 10*(4), 653. https://doi.org/10.21895/incres.2019.v10n4.07

Campo-Ternera, L., Amar-Sepúlveda, P., Olivero Vega, E. and Huguett Herazo, S. (2019). Emprendimiento e innovación como motor del desarrollo sostenible: Estudio bibliométrico (2006-2016). *Revista de Ciencias Sociales, 24*(4), 26-37. https://doi.org/10.31876/rcs.v24i4.24907

Cantillo Campo, N., Pedraza Reyes, C. and Suárez Barros, H. (2021). Formación del emprendimiento social: Compromiso de la Universidad de la Guajira en Colombia. *Revista de Ciencias Sociales (Ve), XXVII*(1), 216-229. https://bit.ly/3wCaGuO

Chell, E. (2007). Social enterprise and entrepreneurship: Towards a convergent theory of the entrepreneurial process. *International Small Business Journal, 25*(1), 5-26. https://doi.org/10.1177/0266242607071779

Chin, W. (1998). The partial least squares approach for structural equation modeling. En G. A. Marcoulides (ed.), *Modern methods for business research* (pp. 295-336). Lawrence Erlbaum Associates Publishers. https://bit.ly/3QcCv45

CLADEA (2018). Desafíos y oportunidades para el emprendimiento femenino. https://bit.ly/3R-0pQSW

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*(1), 98-104. https://doi.org/10.1037/0021-9010.78.1.98

Cuesta, M., Fonseca-Pedrero, E., Vallejo, G. and Muñoz, J. (2013). Datos perdidos y propiedades psicométricas en los tests de personalidad. *Anales de Psicología, 29*(1), 285-292. https://doi.org/10.6018/analesps.29.1.137901

Detrinidad, E. (2018). *Análisis factorial exploratorio y confirmatorio aplicado al modelo de secularización propuesto por Inglehart-Norris. Periodo 2010-2014 (Estudio de caso España, Estados Unidos, Alemania, Holanda).* (Máster en Estadística Aplicada). Departamento de Estadística e Inv. 2014 (septiembre). https://doi.org/10.13140/RG.2.2.21000.26889

Díaz-Bretones, F. and Lejarriaga Pérez De Las Vacas, G. (2018). *Emprendimiento social y empleabilidad.* https://doi.org/10.5209/REVE.62962

Fournier, A. (2011). Emprendimiento social (Social Enterpreneurship) (July 27, 2011). Documentos de investigación, Administración de Empresas, No. 6, Available at SSRN: https://ssrn.com/abstract=2016601; http://dx.doi.org/10.2139/ssrn.2016601

Gálvez, R. and Suárez, M. (2019). *El género como factor condicionante del emprendimiento en Andalucía. In emprendimiento e innovación: oportunidades para todos.* https://bit.ly/3e1Mo75

Garavito, Y., García, S. and Calderón, J. (2021). La intención emprendedora y su relación con las características personales y del contexto de las mujeres universitarias The entrepreneurial intention and its correlation with personal characteristics and the external context of university women La intención. *I+D Revista de Investigaciones, 16,* 238-253. https://doi.org/http://dx.doi.org/10.33304/revinv.v16n1-2021019

GEI Report (2019). GEI_2019_Final-1. En *Global Entrepreneurship Index 2019.* https://doi.org/10.13140/RG.2.2.17692.64641

Giraldo-Mejía, W. and Vara Horna, A. (2018). *El emprendimiento social de base universitaria en Latinoamérica ¿Están las universidades haciendo lo suficiente?* https://bit.ly/3pR0Otg

Guerrero, M. y Santamaría, C. A. (2020). Ecosystem and entrepreneurial activity in Mexico: An exploratory analysis. *Perfiles Latinoamericanos, 28*(55), 227-251. https://doi.org/10.18504/pl2855-009-2020

Guzmán, A. and Trujillo, M. (2008). Emprendimiento social-revisión de literatura 1 Alexander Guzmán Vásquez. *estud. gerenc., 24*(109). https://bit.ly/3pXH8E4

Hernández, J., Franklin, J., Castro, E., Rodríguez, J. E., Karina, M., Torrado, A., Milena, S. and Sierra, C. (2018). Sobre el uso adecuado del coeficiente de correlación de Pearson: definición, propiedades y suposiciones. *Archivos Venezolanos de Farmacología y Terapéutica, 37*(5), 587-595. https://bit.ly/3ReUyHy

Leoro, M. and Farfán, O. (2017). Ecosistema emprendedor y segmentación de emprendedores del sector hotelero. *Revista Científica Ciencia y Tecnología, 17*, 61-85. https://doi.org/10.47189/rcct. v17i16.133

Liu H., Kulturel-Konak, S. and Konak, A. (2021). A measurement model of entrepreneurship education effectiveness based on methodological triangulation. *Studies in Educational Evaluation, 70*(100987),4705-4715. https://doi.org/10.1016/j.stueduc.2021.100987

Merenda, P. (1997). A guide to the proper use of factor analysis in the conduct and reporting of research: Pitfalls to avoid. *Measurement and Evaluation in Counseling and Development, 30*(3), 156-164. https://bit.ly/3AnnqXm

Mora, P., Aguirre, J., Álava, G. and Cordero, J. (2019). Vista de Jóvenes universitarios y su apuesta al emprendimiento social. *Revista Economía y Política, 30*, 5-23. https://doi.org/10.25097/rep.n30.2019.01

Padilla-Angulo, L. (2019). Student associations and entrepreneurial. *Studies in Higher Education, 44*(1), 45-58. https://doi.org/10.1080/03075079.2017.1336215.

Pérez-Briceño, J., Jiménez-Pereira, S. and Gómez-Cabrera, O. (2017). Emprendimiento social: una aproximación teórica-práctica. *Dominio de Las Ciencias, 3*(3 mon), 3-18. https://bit.ly/3AX6eJW

Portillo, M. J. and Millán, A. (2016). Moderator's elements of entrepreneurship. Gender differen-ces. *Suma de Negocios, 7*(15), 47-53. https://doi.org/10.1016/j.sumneg.2016.02.002

Prieto, G. and Delgado, A. R. (2010). *Fiabilidad y validez reliability and validity.* https://bit.ly/3CG8INU

Saavedra-García, M. L., Camarena-Adame, M. E. and Vargas-Sáenz, M. E. (2020). Una aproximación a los conceptos de emprendedor y emprendimiento social. *Revista Universidad y Empresa, 22*(39). https://doi.org/10.12804/revistas.urosario.edu.co/empresa/a.7976

Siles-Nates, M. (2020). *Análisis de los factores de intención emprendedora, propuesta de modelo, Universidad Peruana Unión, Lima 2020.* https://bit.ly/3TmtE2l

Soria-Barreto, K., Zuniga-Jara, S. and Ruiz-Campo, S. (2016). Educación e intención emprendedora en estudiantes universitarios: Un caso de estudio. *Formación Universitaria, 9*(1), 25-34. https://doi.org/10.4067/S0718-50062016000100004

Suárez, A. M. del P. (2014). Emprendimiento innovador en Colombia. *Journal of Chemical Information and Modeling, 25.* https://bit.ly/3ctAjXX

Suárez-Pineda, M., Suárez-Pineda, L. and Zambrano-Vargas, S. M. (2018). Emprendimiento de jóvenes rurales en Boyacá- Colombia: Un compromiso de la educación y los gobiernos locales. *Revista de Ciencias Sociales, 23*(4), 23-32. https://doi.org/10.31876/rcs.v23i4.25135

Thompson, J. (2008). Social enterprise and social entrepreneurship: where have we reached? *The Eletronic Library, 4*(2), 149-161. https://doi.org/10.1108 / 17508610810902039

Van Der Ark, L. A. and Vermunt, J. K. (2010). Editorial: New developments in missing data analysis. *Methodology, 6*(1), 1-2. https://doi.org/10.1027/1614-2241/a000001

Weinberger, K. (2019). Componentes del Ecosistema de Emprendimiento de Lima que Inciden en Crecimiento y Desarrollo de Startups. *Journal of Technology Management & Innovation, 14*(4), 119-136. https://doi.org/10.4067/s0718-27242019000400119

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Quality management systems and educational quality in Mexican Higher Education Public Institutions

Methodology

Statistical methods allow determining the impact on educational quality of the constructs, strategic planning and process management in public HEIs that have implemented quality management systems (QMS).

Objective

Investigate the impact of strategic planning in public higher education institutions (HEIs) on the quality of education, as well as the impact of process management, since it must be aligned with the strategic plan and integrate the guidelines of the groups.

Introduction

The changes in the global scenario have a direct impact on the requirements of Higher Education Institutions, being necessary to establish a management system that integrates a standardized evaluation to guarantee educational quality.

Result or conclusion 1

Public institutions of higher education in Mexico that seek educational quality face the dilemma of considering the r context for their adequate strategic planning to effectively achieve goals and objectives for continuous improvement.

Results or conclusion 2

Process management has an impact on the educational quality of HEIs by systematizing and controlling processes efficiently. However, strategic planning is a determining factor in identifying and achieving the appropriate objectives for each institution and guaranteeing educational quality.

Result or conclusion 3

The obstacles in for achieving educational quality in public institutions of higher education in LATAM will be solved as the goals and objectives derived from strategic planning are identified and achieved and operated with the corresponding process management.
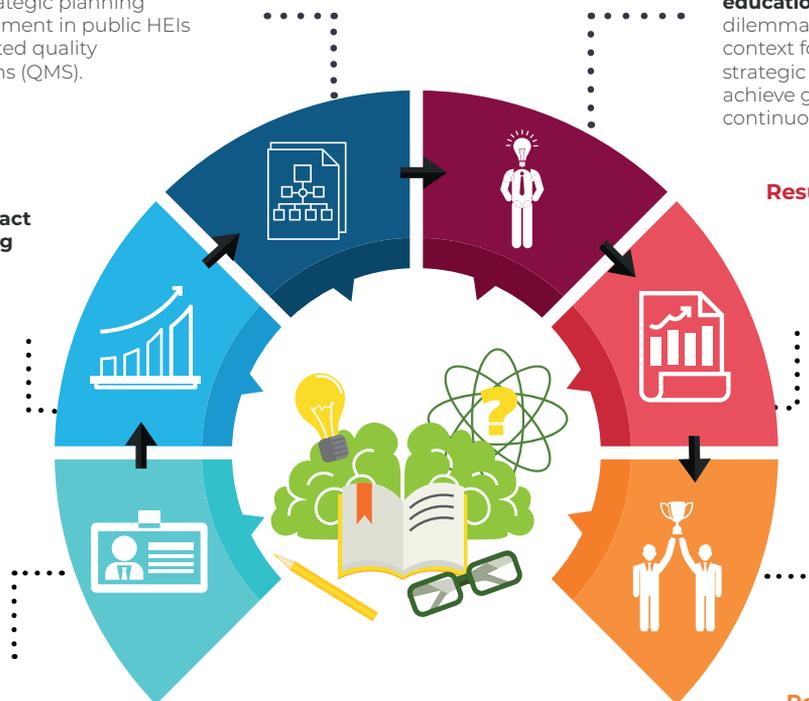
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Quality management systems and educational quality in Mexican Higher Education Public Institutions

Los sistemas de gestión de la calidad y la calidad educativa en Instituciones Públicas de Educación Superior de México

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Abstract: global competitive markets characterized with new regulations, higher education institutions require management systems to assure the achievement of goals and objectives. Thus, quality in processes and work routines imply systems certified in ISO 9001 or 21001 from external parties. This study analyzes the impact of process management and strategic planning on educational quality of 48 public universities in Mexico that belong to a national association and hold ISO 9001:2015 certifications. The objective is centered in determining the effect of process management and strategic planning on educational quality. By using partial least squares structural equation modelling through Smart PLS, results indicate that process management has a positive impact on educational quality; while strategic planning has no impact on the dependent variable. In one hand, the significant result of process management on educational quality is consistent with literature about quality management systems at higher education institutions. On the other hand, the non-significant impact of strategic planning on educational quality is consistent with studies including public institutions with budgets not dependent on institutional performance or student admissions.

Keywords: ISO 9001, certification, university, quality management system, educational quality, strategic planning, process management, ISO 21001.

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Resumen: el actual mercado globalizado de la educación superior propicia nuevos marcos regulatorios para las instituciones que generan la necesidad de sistemas de gestión para el seguimiento y control de objetivos y metas. El aseguramiento de la calidad implica la obtención de acreditaciones y certificaciones por entidades externas basadas en la norma ISO 9001 y la nueva norma ISO 21001. La presente investigación analiza el impacto de las variables de gestión por procesos y de planeación estratégica en la calidad educativa en una muestra de 48 Instituciones Públicas de Educación Superior (IES) de México, pertenecientes a una asociación nacional que cuentan con un sistema de gestión de calidad certificado de acuerdo con la norma ISO 9001:2015. El objetivo del estudio es determinar la incidencia de la gestión por procesos y de la planeación estratégica en la calidad educativa en las IES públicas de México. Mediante el uso de ecuaciones estructurales ajustadas por mínimos cuadrados parciales, los resultados señalan que la gestión por procesos tiene un impacto positivo en la calidad educativa; mientras que la planeación estratégica no presenta impacto en la variable dependiente. Estos hallazgos son consistentes con la literatura, incluyendo la no significancia de la planeación estratégica con la calidad educativa debido a la naturaleza de instituciones públicas con fondos no vinculados al desempeño o la matrícula.

Palabras clave: ISO 9001, acreditación, educación superior, sistema de gestión, calidad educativa, planeación estratégica, gestión por procesos, ISO 21001.

Introduction

Institutions require strategies to achieve their objectives and improve teaching and learning. The linkage of strategic educational management processes that integrate the learning community is essential to recover and improve school performance (Hernández and Miranda, 2020). HEIs also need to adapt to constant external changes of high competitiveness (Tamutienė and Matkevičienė, 2019), in addition to exposing the quality of their different processes through results and generating a reference support to increase their quality levels (Hota and Sarangi, 2019), which reflect the continuous improvement derived from their organizational processes and their value creation (Degtjarjova *et al.*, 2018). The above generates imbalance between the internal quality levels in HEIs and the changing dynamics of the environment (Tadesse *et al.*, 2018), which demand an increase in regulations in the sector (Araya *et al.*, 2018), so that quality is considered a priority in education (Hwang Choi, 2019).

While the Quality Management System (QMS) serves as a response to societal demands for accountability and impact, it is clear that it entails a commitment to accountability from all participants in the Higher Education Institution (HEI). Specifically, the purposes of Quality Management contemplate compliance, control, accountability and improvement (Harvey, 2018). The new global scenario and the technological environment have led universities to focus on quality management to achieve efficiency and effectiveness in the management of educational processes, as a response to the internal and external changes that education has undergone (Gutiérrez and Morales, 2020).

UNICEF (2019) points out that the development of the strategic plan in public and private organizations in Latin America is focused on the internal scheme and the achievement of goals and omits external factors, which permanently affect the change of strategies that respond in accordance with their resources and goals in decisions. The excess of bureaucracy in the institutions, inadequate government policies and the absence of competent personnel to implement them are obstacles in the development of the strategic plan.

The lack of strategic management in most public educational institutions affects the development of the educational project, since the vision and mission omit the real diagnosis of the institution, hindering the achievement of goals and objectives and the operational efficiency. The lack of educational planning is the result of scarce technical and operational information at the managerial levels (Hernández and Fernández, 2018), generating a situational strategic planning with ineffective pedagogical work that limits the achievement of goals and objectives (Díaz and Villafuerte, 2022).

The aim of the paper is to determine the incidence of process management and strategic planning on educational quality in public HEIs in Mexico. The relationships between the aforementioned variables are analyzed by means of structural equations and the results are contrasted with the literature.

Accreditation of a HEI

Accreditation represents a way to support quality externally, used by most national HEIs. The presence of quality in institutional accreditation is considered when evaluating the service of HEIs and their processes (Karahan and Mete, 2014). The updating of training offerings based on reality is reflected in their curricula and their capacity to respond to educational needs, in accordance with the aspirations of the population (Cardona et al., 2020).

It is a planned and systematized evaluation process of an institution or a particular HEI program to establish the degree of compliance, maintenance or improvement of acceptable standards of education, scholarship and infrastructure. Accreditation applies to a particular program and emphasizes the scope of peer review of a particular field of study. Institutional accreditation in HEI is a thorough examination to define whether the educational institution responds a certain standard to achieve a recognition level, and it must align the performance in the field of teaching and research with scientific standards and achieve the educational plans and goals of a certain area (Saviani, 2020).

Basically, there are three accreditation models: regulated market supervised by the State, State control and shared. The first is a model with very little public funding and with a large number of agencies competing in a regulated market. The accreditation agencies are specific to one subject or related to various sectors. The second model is rare and prevails in countries where the State wants to control quality and relates it to funding. In the third model, the State has full responsibility for the provision of quality education, supporting the HEIs in a shared way in the process of program accreditation, which in their autonomy manage the processes. Thus, the participation of the State is relevant for achieving the effectiveness of the quality processes of the educational system (Botero *et al.,* 2021).

ISO 9001:2015 Standard

One of the strategies to ensure that universities are conformed and prepare qualified human talent with the competencies demanded by the current global context is to follow a quality management system, such as ISO. In reference to higher education institutions, this management system is a determining factor for their functioning. Among other aspects, it includes the necessary elements to establish policies, objectives and processes necessary for achieving strategic objectives of an organization (Becerra *et al.,* 2019).

The quality approach starts from its evaluation, derived from its comparative reference for its assessment (Nicoletti, 2021), thus requiring a quality management approach in HEIs that combines management processes in relation to current national models. Diagnosis locates the level of a program or the institution to identify areas of improvement (Rengifo-Millan, 2017). Quality in education is related to the learning goals, the contents that, at the end of schooling, should be known and know how to do through internal and external evaluation, and from the competency model (Montes and Gamboa, 2018). Quality in HEIs meets the balance of education (processes, environment, results) in relation to specific needs, requirements, standards (Belash *et al.,* 2015).

Following a strategic perspective focused on quality and using continuous improvement management models or systems and the ISO 9001 Model, represents the right path to obtain a competitive advantage in any educational institution that seeks to position itself in a prominent place, not only locally but internationally (Castka and Balzarova, 2018). The ISO 9001:2015 Standard in HEIs perceives education from the demand of what students require and not from the presentation of academic offerings.

The support provided by ISO 9001 for establishing other management standards, such as ISO 14001 for environmental management and ISO 21001 for HEI education management, follow the same structure and organization. ISO 9001 represents a benefit in HEIs to obtain better control and improvement of the administrative and educational process, providing advantages and benefits, as well as savings and substantial improvements (Del Castillo *et al.,* 2018).

Benefits of ISO 9001 in Higher Education

The increase in productive and research capacity is among the benefits derived from the ISO 9001 Standard, since the dynamics of improvement incorporates all areas and is adopted as a work tool. Research will mean a simple model for integrating the modifications required to manage change. In addition to the integration of the university in terms of academic and social aspects, since one of the requirements of the ISO Standard establishes mutual benefit in relationships. Best practices and success stories with their results can be shared with other universities in addition to coordinating exchange activities, increasing the level of their professors, students and research (Didriksson, 2016).

It gives the organizational context a view to quality work, since HEIs not only improve organizational activities, but also academic ones. The effects of intertwining one process with others will increase the activities focused on innovation and those related to research. Ultimately, the community focuses on working towards the achievement of common goals (Ceballos, 2014). Certification processes generate certainty from their inception, implementation and certification, and those responsible for HEIs will seek to share significant achievements with the university community, i.e., the involvement and conviction of the community grows, increasing the integration of students and dissemination of extension and specialization programs (Vizcaíno and Martínez, 2014).

Rodríguez (2015) points out that an ISO 9001 certificate represents a reliable support to meet customer expectations. Hernández *et al*. (2017) mention the main advantages of implementation in HEIs: it increases the degree of trust, strengthens research, documentation of processes, involvement, management and control of performance and improves the perception of the institution. It is intended to acquire and contribute to knowledge, in addition to providing the competencies demanded society (Vega and Mestanza Chochabot, 2021).

In educational institutions, which deliver technological and scientific results for the sector such as business, the ISO21001-2018 Standard encourages to establish the process vision by developing, implementing and improving the effectiveness of the Management System in Educational Organizations (SGOE), particularly focused on increasing the satisfaction of the student, as well as other beneficiaries (ISO 21001-2018 Standard).

ISO 21001 Standard

By presenting a Quality Management System (QMS), it is possible to offer an educational offer that meets internationally recognized standards and requirements, which guarantee its competitiveness in the global scenario of universities with high educational prestige. This is how curricular bases and educational curricula present learning and meet the needs of the international, national and knowledge society context (Oliva, 2019; Cardona e*t al.,* 2020; García, 2018; Baeza and Lamadrid, 2018). The proliferation of degrees led to a differentiation in quality, requiring the intervention and control measurement by national systems (CEPAL, UNESCO, 2020).

The ISO 21001 Management Systems for Educational Organizations standard comes into force from May 2018, representing the first international standard. It contemplates the formation of the rules in its levels, in addition to those it omits (adult education, special education, continuing education, languages, etc.), the way it is taught, whether it is classroom-based, distance, online or mixed. It is similar to ISO 9001:2015 (see Table 1) and also considers other international standards focused on education.

The standard focuses on student satisfaction in learning while ISO 9001 focuses on customer satisfaction in service. The relationship with stakeholders defines its performance towards the educational community, in addition to social responsibility in its projection into the future. Accessibility and equity are relevant as inclusion model and in response to the individual and special needs of students. It is worth mentioning the ethical professional environment that emphasizes equitable treatment and confidentiality in the control and handling of data (see Table 1).

Correspondence between the ISO 9001:2015 and ISO 21001:2018 standard

ISO 9001:2015	ISO 21001:2018	Explanation
Customer centered	Focuses on students, their needs and other beneficiaries	Meets the requirements of students and other beneficiaries and exceeds their expectations.
Leadership	Visionary leadership	Stakeholders in the creation, drafting and implementation of the mission, vision and objectives must be involved. The leader maintains unity of purpose and direction, creating conditions for achieving the objectives.
Commitment of people	Commitment of people	The people involved must be competent, empowered and committed to delivering value.
Process approach	Process approach	Management of activities according to interrelated processes.
Improvement	Improvement	Focuses on continuous improvement towards the objectives and goals.
Evidence-based decision making	Evidence-based decision making	Analysis and evaluation of data and information as a basis for decision making.
Relationship management	Relationship management	Relationships with stakeholders (suppliers and collaborating partners) are managed.
	Social responsibility	Social responsibility as a prerequisite for long-term success.
	Accessibility and equity	Inclusion, flexibility, transparency and accountability in managing students' individual and special needs, interests, abilities and backgrounds.
	Ethical behavior in education	Ethical professional environment with equitable treatment of stakeholders.
	Security and data protection	Data control with care and confidentiality.

Calidad educativa

La calidad educativa es un indicador que justifica los distintos planes y reformas del sistema educativo, con el propósito de materializar el concepto de calidad, en términos de eficiencia y eficacia. Esto es, cumplimiento con estándares establecidos con un campo de aplicación en la educación superior (Pedraja *et al.,* 2020). Integra objetivos para los sistemas de evaluación con orientación a ser un proceso que maneje controles en el seguimiento de la labor pedagógica, en docentes y educandos, que verifica el alcance de los procesos integrando medidas de mejora. La contribución que generan las auditorías de calidad consiste en apoyar a los directivos de las IES a integrar mecanismos para incentivar la calidad

y aportar los hallazgos en términos de mejores prácticas y experiencias (Huisman *et al*., 2015).

Educational quality

Educational quality is an indicator that justifies the different plans and reforms of the educational system, with the purpose of materializing the concept of quality in terms of efficiency and effectiveness, i.e., compliance with established standards in higher education (Pedraja *et al*., 2020). It integrates objectives for evaluation systems oriented to be a process that manages controls in the follow-up of the pedagogical work in teachers and students, and verifies the scope of the processes, integrating improvement measures. The contribution generated by quality audits is

to support HEI managers to integrate mechanisms to encourage quality and provide findings in terms of best practices and experiences (Huisman *et al.*, 2015).

Evaluation proposes quantifiable data on educational quality, since inadequate practice hinders the achievement of institutional goals (Calles and Luna-Nemecio, 2020). Review and control tools to educational processes with a view to classifying institutions have been recommended to seek international certification with ISO 9000 standards.

Process management

Educational institutions have shown a trend towards process management to achieve more technical efficiency at the organizational level and orientation towards university quality (López *et al.,* 2018) and institutional success, in addition to fostering innovation and total quality (Bonilla *et al.*, 2018). The vision of processes conforms input and output mechanisms, and the sequence, interaction with other processes, as well as their monitoring, measurement of performance indicators should be determined to guarantee the effectiveness of the operation.

The process management model allows defining the starting point of the organization, the goal and the activities necessary to achieve the planned objectives (Jiménez *et al.*, 2018). The process is made up of a set of defined, repeatable and measurable activities whose essence is to transform inputs into elements that generate contribution for customers. The classification of processes depends on their purpose, importance, scope and orientation. In relation to their purpose, they can be considered strategic, key and support processes. Those that provide support for the key processes to function effectively are support processes aimed at providing the requirements for the essential processes, which are: human resources, general administration and physical plant or locations. The processes that determine the achievement of objectives, their monitoring and control are strategic processes (Zelt *et al.*, 2018). They belong to the responsibilities of management made up of short, medium and long-term action plans. They are based on

determining strategies to design and improve areas such as: academic, financial, research, budgetary, organizational and evaluative planning at the institutional level.

The documentation of processes propitiates a confidence to stakeholders, control measures to provide a quality assurance, commitment and integral participation of the institution, optimizing the different administrative processes in an efficient and effective way (Moreta and Moyolema, 2017). Therefore, the following hypothesis emerges:

> *H1: Process management in HEIs has a positive impact on educational quality.*

Strategic planning

An organization's strategy has traditionally been defined in terms of goals and objectives that determine a course of action with the necessary resources. For Rincón (2019) the strategic plan is the means to locate the organization in terms of how it is, what it wishes to achieve and the necessary paths it requires on the way to improve certain aspects, modifying the current reality towards the achievement of a specific goal and the way to develop it (Vergara *et al.*, 2021). In the quality of education, the strategy defines the vision of the future to be achieved and the process that leads to achieving it (García *et al.,* 2018). It is important to consider the importance of planning the quality management system, which is aligned with the strategic plan of the institution, in addition to integrating the guidelines of the stakeholders (Díaz and Salazar, 2021).

Regarding HEIs and the fulfillment of strategic plans, they have opted to generate development plans in which short-, medium- or long-term goals and objectives are defined. HEIs seek to create transparency, develop and achieve goals through the adequate use of human and material resources, the design of a curricular program at different levels and an institutional scheme regulated by a strategic plan, which provides the conditions to operate in a scheme of effectiveness, efficiency and productivity. Strategic planning constitutes a valuable guide in terms of competitive advantage, since it fosters the development

of educational resources and directs the IEs to a common vision and direction (Al-Hasanat *et al.*, 2021). It establishes monitoring and evaluation, reduces uncertainty and increases the possibility of monitoring, evaluating and identifying strategic interests (Madzimure and Mashishi, 2021). It also promotes the linkage of the institution and is the basis for improving the quality of education at all levels (Cruz and Santos, 2021), enabling change in the HEI from the actual state to the desired state and establishes the school as an active space focused on quality improvement (Priyambodo and Hasanah, 2021). Therefore, the following hypothesis emerges:

> *H2: Strategic planning in HEIs has a positive impact on educational quality.*

Materials and Method

This article is quantitative with a causal correlational approach. The design is cross-sectional, as data was collected in a determined period of time during the first semester of 2022. Also, a sample of 52 Higher Education Institutions located in Mexico, which have a QMS aligned and accredited according to the ISO 9001: 2015 Standard, was selected. Regarding the design of the instrument, items focused on process management (VIGP) based on Hrabal *et al.* (2020); Hernaus *et al.* (2012); Solis (2018) and Saravia *et al.* (2020) items focused on strategic planning (VIPE) based on Das *et al.* (2011); Healey *et al.* (2015); Jimoh *et al.* (2016); Elbannaa *et al.* (2016) and López *et al.* (2020); as well as items focused on the dependent variable on educational quality (VDCE) whose elaboration is based on the vision of the Universidad Autónoma de Nuevo León (UANL, 2018).

The target population is made up of 115 public HEIs associated with ANUIES that have implemented and certified an ISO 9001:2015 Quality SG, considered as a population census, which makes up the population of interest. The selection of these HEIs is due to the fact that within the requirements that HEIs must meet to belong to ANUIES to make valid and operational the management of the variables of this study. Likewise, it is important to mention that the selected HEIs cover approximately 50 % of the total enrollment of higher education students in Mexico enrolled in public institutions.

Regarding the profile of the HEIs, 48 out of 115participated, representing 48% of the population census. Regarding the educational subsystem to which the participating HEIs belong: 23 % are Decentralized Units of the National Technological Institute of Mexico, 23 % are Federal Units of the National Technological Institute of Mexico, 23 % are State Public Universities, 15 % are Technological Universities and the rest (16 %) belong to other types of subsystems (see Table 2).

Table 2
Classification of HEIs in the study

Educational subsystem HEIs	%
Decentralized Units of Tecnológico Nacional de México	23 %
Federal Units of Tecnológico Nacional de México	23 %
State Public Universities	23 %
Technological Universities	15 %
Other	16 %

In relation to the position in which they work and their seniority, 66.6 % of the participants work in the planning area and only 29 % in the quality area; and a little more than half of the participants (56%) stated that they had been in the position for between one and five years.

Regarding the unit of analysis, planning directors and/or quality directors at the institutional level were considered. This choice is due to the fact that the planning directors are the ones

who coordinate the elaboration and follow-up of the Strategic Plans of the HEIs, while the quality directors are the ones who follow up the implementation of the ISO 9001 Quality Management Systems in the institutions under study.

As for the profile of the participants, 54 % of the participants are men and 46 % are women. Their ages are: 58.5 % of the participants are between 41 and 60 years old, followed by those between 21 and 40 years old (35.5 %). Only 6 % of the participants said they were over 60 years of age. The educational background of the study population revealed that 75 % had a master's degree.

With respect to the application of the instrument, the directory of those responsible for the QMS in the HEIs that are part of the National Association of Universities and Institutions of Higher Education of Mexico (ANUIES) was used. Therefore, quality coordinators and academic directors responded to the questions that make up the measurement instrument during the first semester of 2022.

In relation to the classification by number of students of the HEIs, 6 % stated that they had 1000 or less students, 52 % between 1001 and 5000 students, 10 % between 10 001 and 50 000 students, 19 % between 5001 and 10 000 students and 13 % more than 50 000 students. In relation to the number of employees working in the HEIs, they are as follows: 54 % of HEIs are small (500 or less employees), 29 % are medium (between 501 and 5000 employees) and 17 % are large (more than 5000 employees). With respect to the ISO 9001:2015 QMS: 77 % reported having more than ten years with the system, followed by 15 % who reported having between six and ten years with the QMS; and only 8 % reported having between one and five years with the system.

Results

The reliability results of the instrument integrate Cronbach's Alpha metrics (Table 3), higher than 0.70 for each of the variables. Similarly, the AVE (Average Variance Extracted) is included, being an estimate of the percentage variance degree established by the latent variable component for measuring the error variance (Hair *et al.*, 2017). The above shows that the latent variables, when placed above 0.50, explain at least half of the variance of their indicators. Table 3 shows the latent variables and the results comply with the convergent validity in the AVE column.

Table 3
Reliability and construct validity

	Cronbach's alpha	rho_A	Composite Reliability	AVE
(VDCE)	0.919	0.929	0.945	0.814
(VIGP)	0.966	0.966	0.972	0.831
(VIPE)	0.967	0.971	0.975	0.885

Hypothesis testing is confirmed by applying the partial least squares (PLS) adjusted by structural equation method. This technique constructs research models based on theoretical concepts and derived in unobservable (latent) variables and empirical elements in indicators. By means of relationships, it is possible to present the hypotheses graphically, using trajectory diagrams, and the direction of the relationships of a latent variable can be determined in relation to its indicators. The Structural Equation model generated for this research (Figure 1) and the model generated in the SMART PLS software (Figure 2) are presented below.

Figure 1
Structural equation model
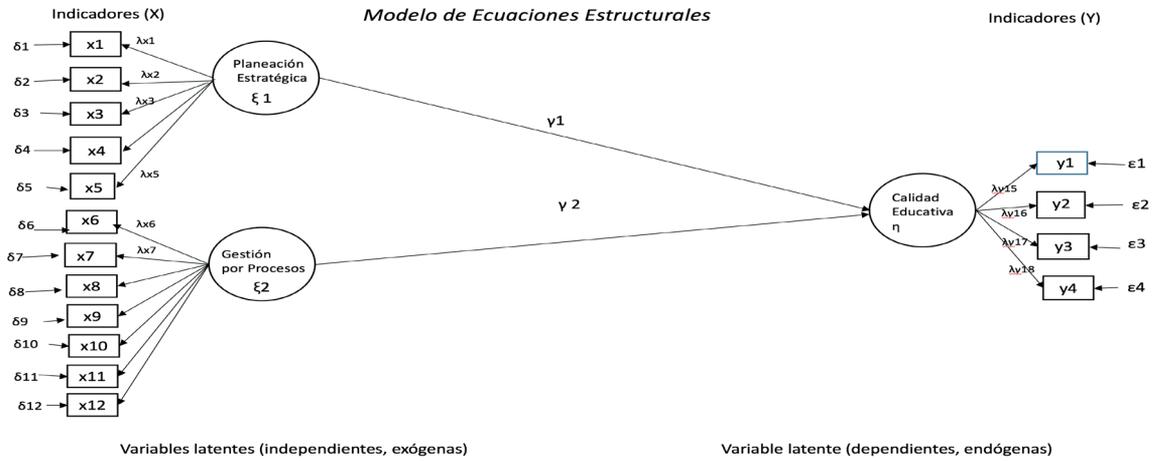
As for the internal reliability, the parameter of each item was placed in a range from 0 to 1, so the values close to 0.70 mean a limit of acceptability (Hair *et al.,* 2017). In summary, all 16 items show the acceptable values above 0.70 (Figure 2).

Figure 2
Internal reliability of the model
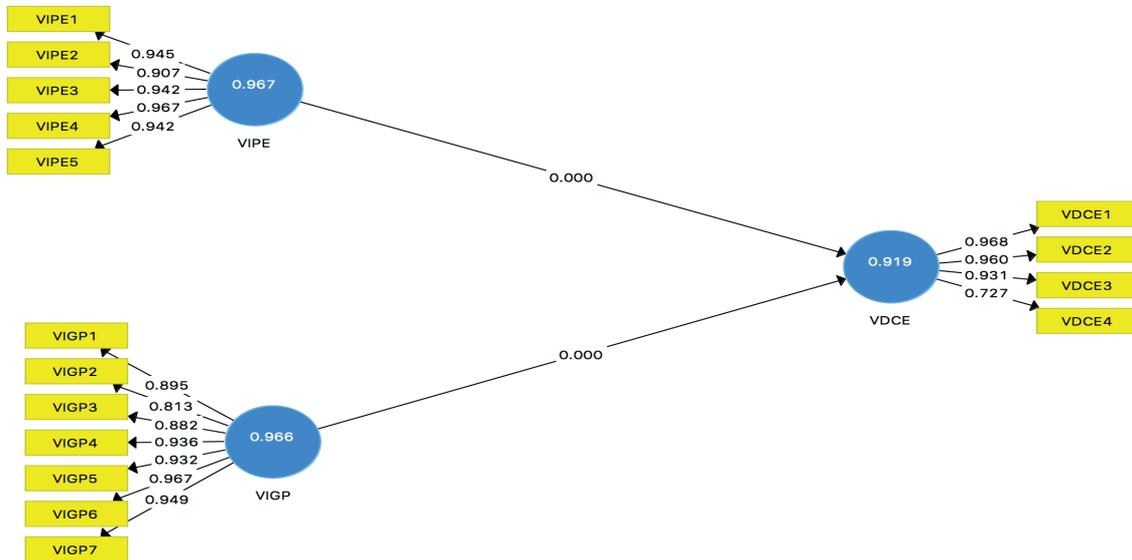
Note. Own elaboration based on Smart PLS software.

With the estimation of the path coefficients (Table 4) standardized in a range from + 1 to -1, it is verified that the higher the value, the greater the relationship between constructs and the closer to 0, the less the prediction. The accepted value within the range is that corresponding

to VIGP-VDCE with 0, located in the range of $p<0.05$. On the other hand, VIPE-VDCE presents a result of 0.504 located above the acceptable value. The significance level is determined with the re-sampling process, and tries to find the standard error of the parameters, as well as the Student's t-values. Being able to obtain N set of samples, with n observations each one, it is intended to make a comparison with the hypotheses raised.

Table 4
Coeficientes path

	Original sample	Sample mean	Standard deviation	Statistics t	P values Sig
VIGP-VDCE	0.652	0.617	0.162	4.022	**0 (p<0.05)**
VIPE-VDCE	0.107	0.146	0.16	0.668	0.504 (p>0.05)

As for the estimation of F2 (Table 5), the participatory relationship of an independent variable in R2 of the dependent variable is considered. Cohen (1988, in Hair *et al.*, 2017 p. 271) establishes an evaluation to measure F2: 0.02, which means a small effect; 0.15 a medium effect and 0.35 a large effect. In that sense, the Strategic Planning variable (VIPE) contributes to a result of 0.009 in F2 and its effect is almost null in Educational Quality, which is the dependent variable by being located below the value of 0.02. As for the Process Management variable (VIGP), it has more participation in the explanation of the dependent variable corresponding to the Educational Quality variable (VDCE) with a score of 0.328, corresponding to a large effect according to Cohen's valuation, as shown in Table 5.

Table 5
Determination coefficient of F2 of the constructs

Construct	Name	F2	Effect
Strategic Planning	VIPE	0.009	small
Process Management	VIGP	**0.328**	**big**

The results processed in the Smart PLS program are presented in Table 6 with each construct: Cronbach's alpha, composite reliability, average variance extracted (AVE), F2, R2.

Table 6
Final model statistics

Construct	Cronbach's alpha	Composite reliability	AVE	F2	R2
VIPE	0.967	0.975	0.885	0.009	
VIGP	0.966	0.972	0.831	0.328	
VDCE	0.919	0.945	0.814		0.549

The independent variable Process Management (Table 7) shows a large and direct positive effect on the variable Educational Quality with a correlation coefficient that based on Cohen's

valuation is 0.328. Likewise, the accepted value within the range is that corresponding to VI-GP-VDCE with 0, located in the range of p<0.05

at the significance level; therefore, the hypothesis is confirmed as accepted.

Table 7
Testing hypothesis 1

Hypothesis	Relation	Proposed effect	F2	Effect	Statistics t	p Values	Significance level	Results
H1	VIGP-VDCE	positive	0.328	**Big**	4.022	0	<0.05	**Accepted**

Regarding the second hypothesis of this study, the independent variable which is the Strategic Planning (Table 8) presents a small effect on the variable Educational Quality, since

the F2 results are 0.009, placing it in that range. Its significance level is located as > 0.05 since it has a p-value of 0.504, so it is considered a rejected hypothesis.

Table 8
Testing hypothesis 2

Hypothesis	Relation	Proposed effect	F2	Effect	Statistics t	p Values	Significance level	Results
H2	VIPE-VDCE	positive	0.009	**small**	0.668	0.504	> 0.05	**Rejected**

Therefore, the research yielded that hypothesis 1 on the impact of process management variable on educational quality in HEIs is accepted. This is related with studies conducted by Irmayani *et al.* (2018). On the other hand, hypothesis 2 on the impact of strategic planning on the educational quality of HEIs is rejected, being consisted with the research of Hu *et al.* (2018) and Santamaría (2022) regarding the poor relationship of strategic planning on the educational quality of public institutions, given that they have public resources and defined budget items.

Conclusions and discussion

The changing environment faced by the public and private sectors increases the complexity of meeting the needs of stakeholders. In addition to the requirements of each institution, especially public institutions, it is essential to determine the relevance of integrating management systems (Cepeda and Cifuentes, 2019). Educational quality is related to terms of equity, efficiency, effectiveness, innovation, transformation, among others (Suasnabas Pacheco and Juárez, 2020). In

order to improve the quality of education and the educational system, educational evaluation represents a key tool to the extent that public policies are coherent with global, national and regional changes and education is relevant to them (Gil *et al.*, 2017).

The findings confirm UNICEF's (2019) studies for Latin America that emphasize the need to consider the context of HEIs in strategic planning for the development of an institution towards organizational quality. While it is possible through process management to decrease the level of bureaucracy by controlling and evaluating activities, institutional excellence is based on establishing strategies that respond to educational problems and needs, measured through achievable objectives (Madrigal and Calderón, 2017; Barbón and Fernández, 2018). It is required to analyze the context, identify opportunities for improvement to achieve the objectives as a result of proper planning, organization and monitoring (Ada, 2018).

In short, in order to achieve quality in education it is necessary, in addition to integrating and controlling processes, that these respond to the follow-up of goals and objectives derived from

a particular educational context. The results of the study indicate the contribution of the process approach to educational quality in the development of activities in HEIs, which must be aligned to an adequate strategic planning with particular goals and objectives for each institution. The reality of each institution requires certain strategies for achieving its objectives and, particularly in public HEIs, improving the teaching and learning, so that the relation of strategic educational management processes with the entire learning community is crucial to recover and improve school performance (Hernández and Miranda, 2020).

References

Ada, S. (2018). Los problemas a los que se enfrentan los administradores y profesores de secundaria en relación con la administración estratégica. *Eurasian Journal of Educational Research,* (78), 159-182.

Al-Hasanat, A., Al-Hasanat, O. and Al-Falahat, M. (2021). Strategic planning and its importance in crisis management in the directorate of education in the district of

Petra. *International Geographical Education Online*, 11(5), 4700-4709. https://doi.org/10.48047/rigeo.11.05.345

Araya-Castillo, L., Yáñez, V., Barrientos, N. and Rivera, Y. (2018). Aplicación de la teoría de grupos estratégicos en sectores de educación superior. Aposta. Revista de Ciencias Sociales, (79), 197-215.

Baeza, A. and Lamadrid, S. (2018). Trayectorias educativas según género. Lo invisible para la política educativa chilena. *Revista de Investigación Educativa*, 36(2), 471-490. https://doi.org/10.6018/rie.36.2.298061

Belash, O., Popov, M., Ryzhov, N., Ryaskov, Y., Shaposhnikov, S. and Shestopalov, M. (2015). Research on university education quality assurance: Methodology and results of stakeholders' satisfaction monitoring. *Procedia-Social and Behavioral Sciences*, *214*, 344-358. https://doi.org 10.1016/jsbspro.2015.11.658

Barbón, O. and Fernández, J. (2018). Rol de la gestión educativa estratégica en la gestión del conocimiento, la ciencia, la tecnología y la innovación en la educación superior. *Educación Médica, 19*(1), 1575-1813, https:// doi.org/10.1016/j.edumed.2016.12.001

Bonilla, D., Macero, R. and Mora, E. (2018). La importancia de la capacitación en el rendimiento del personal administrativo de la Universidad Técnica de Ambato. *Revista Conrado, 14*(63), 268-273. https://bit.ly/3TLWMQR

Botero, S., Atencio, F., Tafur, J. and Hernández, H. (2021). Proceso vital en la gestión educativa: Herramienta de alta calidad hacia la sostenibilidad ambiental. *Revista de Ciencias Sociales* (Ve), *XXVII*(2), 309-321. https://doi.org/10.31876/rcs.v27i2.35916

Calles, M. and Luna-Nemecio, J. (2020). Cultura organizacional bajo el enfoque socioformativo: Proyección de Instituciones de Educación Superior en México. Revista de Ciencias Sociales (Ve), XXVI((Número especial 2), 172-189

Cardona, J., Velásquez, F., Galviz, D., Botero, M., Rico, J. and Jaramillo, R. (2020). Política educativa en Colombia: cambios y reestructuraciones desde los ochenta hasta el inicio del nuevo siglo. *Brazilian Journal of Development, 6*(5), 26793-26809. https://doi.org/10.34117/bjdv6n5-219

Castka, P. and Balzarova, M. A. (2018). An exploration of interventions in ISO 9001 and ISO 14001 certification context. A multiple case study approach. *Journal of cleaner production, 174,* 1642-1652. https://doi.org/10.1016/j.jclepro.2017.11.096

Ceballos, D. (2014). La calidad educativa en la realidad universitaria peruana frente al contexto latinoamericano. *Flumen*, *7*, 5. https://bit.ly/3TQjPd9

CEPAL, UNESCO (2020). La educación en tiempos de la pandemia de COVID-19. *Revista Latinoamericana de Educación Comparada: RELEC, 11*(18), 250-270. https://bit.ly/3BknGI8

Cepeda Duarte, J. P. and Cifuentes Martínez, W. E. (2019). Sistemas de Gestión de Calidad en el Sector Público. Una revisión literaria. *Podium,* (36), 35-54. https://doi.org/10.31095/podium.2019.36.3

Cruz, C. and Santos, O. (2021). La gestión de los directivos y la calidad del servicio educativo del colegio San Antonio Marianistas, Bellavista, Región Callao. *Journal of the Academy*, (4), 63-89. https://doi.org/10.47058/joa4.5

Degtjarjova, I., Lapina, I. and Freidenfelds, D. (2018). Student as stakeholder: 'voice of customer' in higher education quality development. *Marketing and Management of Innovations, 2, 388-398.* https://doi.org/10.21272/mmi.2018.2-30

Del Castillo-Peces, C., Mercado-Idoeta, C., Prado-Roman, M. and del Castillo-Feito, C. (2018). The influence of motivations and other factors on the results of implementing ISO 9001 standards. European *Research on Management and*

Business Economics, 24(1), 33-41. https://doi.org/10.1016/j.iedeen.2017.02.002

Díaz Pérez, A. and Villafuerte Álvarez, C. A. (2022). Planeamiento Estratégico de la Educación. *Comuni@cción,13*(2),161-171. http://dx.doi.org/10.33595/22261478.13.2.681

Díaz Muñoz, G. A. and Salazar Duque, D. A. (2021). La calidad como herramienta estratégica para la gestión empresarial. *Podium, 39*, 19-36. https://doi.org/10.31095/podium.2021.39.2

Didriksson, A. (2016). Economía del conocimiento y universidad pública en América Latina. *Revista Latinoamericana de Educación Comparada: RELEC, 7*(10), 21-34. https://bit.ly/3RDR1Tf

Elbannaa, S., Andrews, R. and Pollanen, R. (2016). Strategic planning and implementation success in public service organizations: evidence from Canada. *Public Management Review*, 1-26. https://doi.org/10.1080/14719037.2015.1051576

García, C. M. (2018). La mercantilización de la educación superior en Colombia. *Educación y Humanismo, 20*(34), 36-58. http://dx.doi.org/10.17081/eduhum.20.34.2857

García Colina, F. J., Juárez Hernández, S. C. and Salgado García, L. (2018). Gestión escolar y calidad educativa. *Revista Cubana de Educación Superior, 37*(2), 206-216. https://bit.ly/2E6uwCg

Gutiérrez, Z. and Morales, I. (2020). Una mirada a la política educativa. *Revista Dilemas Contemporáneos: Educación, Política y Valores, 2*(84), 98-99. https://doi.org/10.1111/cjag.12228

Harvey, L. (2018). Lessons learned from two decades of Quality in Higher Education. In *Research Handbook on Quality, Performance and Accountability in Higher Education*. Edward Elgar Publishing.

Hair Jr., J. F., Hult, G. T. M., Ringle, C. and Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modelin (PLS-SEM).* Second Edition. SAGE Publications, Inc.

Healey, M., Hodgkinson, G., Whittington, R. and Johnson, G. (2015). Off to plan or out to lunch? Relationships between design characteristics and outcomes of strategy workshops. *British Journal of Management, 26*(3), 507-528. https://doi.org/10.1111/1467-8551.12038

Hernández, H., Martínez, D. and Rodríguez, J. (2017). Gestión de la calidad aplicada en el mejoramiento del sector universitario. *Revista Espacios, 38*(20), 29. https://bit.ly/3TR9D48

Hernández, G. and Fernández, J. (2018). La planificación estratégica e indicadores de calidad educativa. *Revista Nacional de Administración, 9*(1), 69-86. https://doi.org/10.22458/rna.v9i1.2103

Hernández, A. and Miranda, D. (2020). Gestión educativa estratégica como eje para la transformación de comunidades de aprendizaje. *Revista Espacios, 41*(44), 1-14. https://bit.ly/3RGHQBx

Hernaus, T., Pejic, M. and Bosilj, V. (2012). Influence of strategic approach to BPM on financial and non-financial performance. *Baltic Journal of Management*, 376-396. https://doi.org/10.1108/17465261211272148

Hota, P. and Sarangi, P. (2019). Quality revolution of Higher Education: A study in India. *Srusti Management Review, XII*(I), 49-56. https://bit.ly/3qg7CAY

Hrabal, M., Tuček, D., Molnár, V. and Fedorko, G. (2021). Human factor in business process management: modeling competencies of BPM roles. *Business Process Management Journal, 27*(1), 275-305. https://doi.org/10.1108/BPMJ-04-2020-0161

Hu, J., Liu, H., Chen, Y. and Qin, J. (2018). Strategic planning and the stratification of Chinese higher education institutions. *International Journal of Educational Development, 63*, 36-43. https://doi.org/10.1016/j.ijedudev.2017.03.003

Hwang, Y. S. and Choi, Y. K. (2019). Higher education service quality and student satisfaction, institutional image, and behavioral intention. *Social Behavior and Personality: an International Journal, 47*(2), 1-12. https://doi.org/10.2224/sbp.7622.

Huisman, J., De Boer, H., Dill, D. D. and Souto-Otero, M. (eds.) (2015). *The Palgrave international handbook of higher education policy and governance.* Palgrave Macmillan.

ISO 9001:2015. International Organization for Standarization-ISO. ISO 9001:2015. (2015). ISO 9001:2015-Qualitu management systems-Fundamentals and vocabulary. ISO 9001: 2015-Quality management systems-Fundamentals and vocabulary. Geneva, Switzerland:ISO central Secretariat.

ISO 21001. International Organization for Standarization-ISO. (2018). ISO 21001-Educational organizations - Management systems for educational organizations-Requiremets with guidance for use. *ISO 21001-Educational organizations-Management systems for educational organizations-Requiremets with guidance for use.*Geneva, Switzerland:ISO central Secretariat.

Irmayani, H., Wardiah, D. and Kristiawan, M. (2018). The strategy of SD Pusri in improving educational quality. *International Journal of Scientific & Technology Research, 7*(7), 113-121. https://bit.ly/3cOvCIy

Jiménez, W., Gallardo, W. and Ortiz, W. (2018). Modelo de gestión por procesos en las Universidades del Ecuador. *Revista Científica Ciencia y Tecnología, 1*(17), 1-14. https://bit.ly/3Rml6XU

Jimoh, D., Nurahimah, M. and Arsaythamby, V. (2016). Validating quality process management instrument for Higher Education using structural equation modelling. *International Journal for Quality Research,* 341-354. https://doi.org/10.18421/IJQR10.02-07

Karahan, M. and Mete, M. (2014). Examination of total quality management practices in higher education in the context of quality sufficiency. *Procedia-Social and Behavioral Sciences*, 109, 1292-1297. https://doi.org/10.1016/j.sbspro.2013.12.627

López, F., García, I. and Expósito E. (2020). Un marco analítico para la evaluación de la calidad de la gobernanza de los sistemas educativos. *Revista Iberoamericana de Educación*, *83*(1), 53-76. https://doi.org/10.35362/rie8313672

López, H., Caicedo, F. and Bonilla, D. (2018). Indicadores clave para la evaluación institucional de universidades; caso investigación científica, Ecuador y otros países. *Revista Sarance*, (40), 57. https://bit.ly/3KNIrPP

Madrigal, A. and Calderón, M. (2017). La planificación estratégica en las instituciones de educación superior. *Gaceta Médica Espirituana, 19*(1), 6-9.

Madzimure, J. and Mashishi, P. (2021). Evaluating the significance of strategic management on the monitoring and evaluation of secondary schools in Gauteng Province, South Africa. *EuroEconomica, 40*(1). https://bit.ly/3QlvHRD

Montes Miranda, A. J. and Gamboa Suárez, A. A. (2018). Miradas sobre la calidad de la educación básica en Iberoamérica: Visiones de España y Colombia. Revista historia de la educación latinoamericana, 20(31), 229-244. https://doi.org/10.19053/01227238.8721

Moreta Pimbo, K. A. and Moyolema Palate, A. E. (2017). *Modelo de gestión por procesos de la Facultad de Ciencias Administrativas.* (Bachelor's tesis). Universidad Técnica de Ambato. Facultad de Ciencias Administrativas. Carrera Organización de Empresas.

Nicoletti, J. A. (2021). Propuestas formativas de calidad del profesorado universitario para la inclusión. En *Diálogos para la educación inclusiva II* (pp. 52-58). Pequén Académico.

Oliva, M. (2019). Seis epígrafes para la disciplina escolar: política educativa chilena reciente. Revista *Lusófona de Educação*, *43,* 11-25. https://doi.org/10.24140/issn.1645-7250.rle43.01

Pedraja-Rejas, L., Marchioni-Choque, Í.A., Espinoza-Marchant, C. J. and Muñoz-Fritis, C.P. (2020). Liderazgo y cultura organizacional como factores de influencia en la calidad universitaria: un análisis conceptual. *Formación universitaria*, *13*(5),3-14. https://bit.ly/3KQmf7s

Priyambodo, P. and Hasanah, E. (2021). Strategic planning in increasing quality of education. *Nidhomul Haq: Jurnal Manajemen Pendidikan Islam, 6*(1), 109-126. https://doi.org/10.31538/ndh.v6i1.1138

Rengifo-Millán, M. (2017). Calidad en la educación superior desde las ciencias sociales y administrativas. *Revista Latinoamericana de Ciencias Sociales, Niñez y Juventud, 15*(2), 1251-1270. http://dx.doi.org/10.11600/1692715x.1523113092016

Rincón, Y. (2019). La planeación como herramienta de éxito en la mejora continua de las instituciones educativas en Colombia. *Dialéctica* (1). https://bit.ly/3RkA2Wo

Rodríguez Gómez, R. (2015). El proyecto educativo SEP-SNTE y la prueba ENLACE. *Revista Mexicana de Investigación Educativa, 20*(64), 309-324. https://bit.ly/3qgWTpT

Santamaría, M. M. B. (2022). La planeación estratégica y la gestión administrativa en Educación. *Revista El Labrador*, *6*(01). https://bit.ly/3cOHXMG

Saravia, E., Sanchís, C. and Albort, G. (2020). Organizational culture, process management and maturity of the process: an empirical study of the process status in Peru. *Global Business Review,* 1-23. https://doi.org/10.1177/0972150920916036

Saviani, D. (2020). Políticas educacionais em tempos de golpe: retrocessos e formas de resistência. *Roteiro*, *45*, 1-18. https://doi.org/10.18593/r.v45i0.21512

Solís Pérez, M. (2018). *Factores institucionales que influyen en la eficacia escolar del nivel medio superior en la Universidad Autónoma de Nuevo León* (Doctoral dissertation). Universidad Autónoma de Nuevo León.

Suasnabas Pacheco, L. and Juárez, J. F. (2020). Calidad de la educación en Ecuador. ¿Mito o realidad? *Dominio de las Ciencias*, *6*(2), 133-157. https://bit.ly/3AShp5k

Tamutienė, L. and Matkevičienė, R. (2019). Quality in the higher education sector: comparison of communication of criteria for quality assurance in webpages of state universities in Lithuania and Latvia. *Acta Prosperitatis, 10,* 109-130.

Tadesse, T., Manathunga, C. and Gillies R. (2018). Making sense of quality teaching and learning

in higher eduaction in Ethiopia: Unfolding existing realities for future promises. *Journal of University Teaching & Learning Practice, 15*(1). https://bit.ly/3epKQE7

UANL. (2018). Plan de Desarrollo Institucional 2018-2030. Plan de Desarrollo Institucional 2018-2030. San Nicolás de los Garza, Nuevo León, México: UANL.

UNICEF. (2019). Estrategia, cada niño aprende. Estrategia de educación 2019-2030. https://uni.cf/3Rmr2jL

Vega Becerra M. and Mestanza Chochabot, J. (2021). Competencias tecnológicas para la Calidad Educativa. *Epistemia*., *5*(1). https://doi.org/10.26495/re.v5i1.1883

Vergara, E., De la Cruz, M., Vertiz, J., Rosillo, F. F., Quispe, D. and Vertiz, R. (2021). Gestión insti-

tucional y planificación estratégica en una institución educativa pública del distrito de Jaén, Cajamarca, Perú. *Revista Científica Pakamuros*, *9*(1), 42-53. https://doi.org/10.37787/pakamuros-unj.v9i1.162

Vizcaíno, J. and Martínez, A. (2014). Experiencia ecuatoriana para el cambio organizacional de las instituciones de educación superior como pilar fundamental para el mejoramiento de su calidad académica. *Ciencia Administrativa*, *2*, 169. https://bit.ly/3RBB4gq

Zelt, S., Recker, J., Schmiedel, T. and Vom Brocke, J. (2018). Development and validation of an instrument to measure and manage organizational process variety. *PloS one, 13*(10), e0206198. https://doi.org/10.1371/journal.pone.0206198

Variables of corporate social responsibility.
A structural equation model

Methodology
The study considered the design of an instrument based on referential research, which was applied to 778 workers.
In the analysis, a structural equation model was proposed to identify the associations and relationships for corporate social responsibility.

Objective
To identify and validate the variables that condition and relate
corporate social responsibility.

Introduction
The future value of organizations is conditioned by economic performance along with the satisfaction of social and stakeholder needs;
thus, achieving high levels of corporate social responsibility is a requirement for business success.

Result or conclusion 1
The evaluation of the model and its validation through confirmatory factor
analysis allowed to confirm that corporate social responsibility presents a development conditioned by a multidimensional approach.

Results or conclusion 2
Job satisfaction shows a dual character:
on the one hand, the creation of conditions conducive to job satisfaction is a manifestation of CSR fulfillment; on the other hand, as job satisfaction increases, higher levels of CSR can be achieved.

Result or conclusion 3
Internal organizational variables that show a significant correlation level with CSR recognized by customers are observed,
such as leadership, communication, competency development, organizational values and job satisfaction.
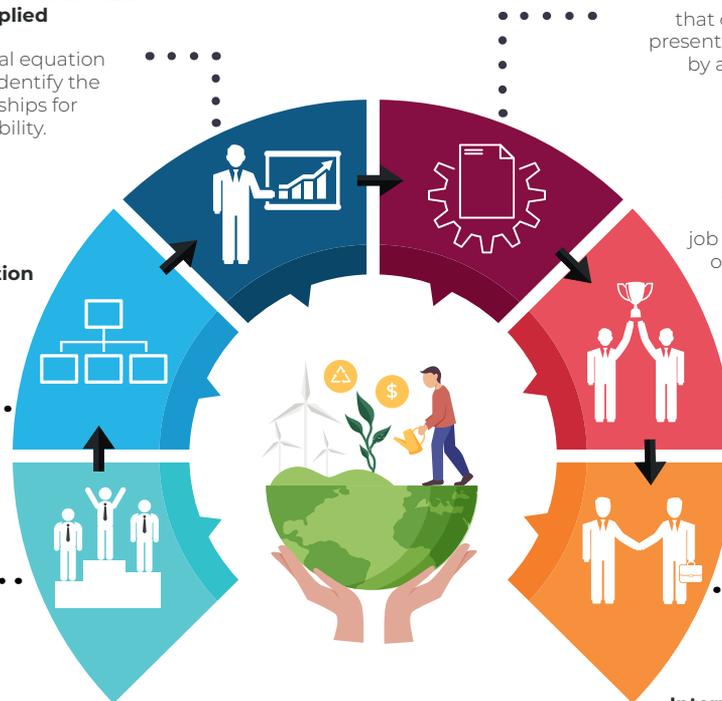
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Variables of corporate social responsibility. A structural equation model

Variables de la responsabilidad social corporativa. Un modelo de ecuaciones estructurales

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Abstract: the future value of organizations depends on the economic performance related to their level of response to social needs and interest groups, as well as the type of relationship established with the environment in which it develops and influences. Thus, achieving high levels of corporate social responsibility (CSR) becomes a necessity for business success. This type of research is empirical. The research was aimed at identifying and validating the variables that condition and are related to CSR. The study considered in its methodology the design of an instrument based on referential research, which was applied to 778 workers. In the analysis, a structural equation model was proposed to identify associations and relationships for CSR. The evaluation of this model of structural equations and its validation through the confirmatory factorial analysis allowed to verify, as main conclusions, that corporate social responsibility presents a development conditioned by a multidimensional approach, where internal variables of the organization are manifested that show a significant correlation level with the CSR that the organization's customers recognize, such as leadership, orientation strategy, organizational design, communication, the development of labor competences, organizational values and job satisfaction, keeping a close relationship with previous research.

Keywords: corporate social responsibility, structural equations, leadership, business strategy, organizational design, communication, labor competences, organizational values, job satisfaction.

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Resumen: el valor futuro de las organizaciones viene determinado por sus resultados económicos junto con su nivel de respuesta a las necesidades de la sociedad y los grupos de interés, así como por el tipo de relación que establezcan con el ambiente en el que se desenvuelve e influye. Así, alcanzar altos niveles de responsabilidad social corporativa (RSC) se convierte en una necesidad para el éxito empresarial. Este tipo de investigación tiene un enfoque empírico. La investigación se orientó a identificar y validar las variables que condicionan y se relacionan con la RSC. El estudio consideró en su metodología el diseño de un instrumento a partir de investigaciones referenciales, el cual fue aplicado a 778 trabajadores. En el análisis se propuso un modelo de ecuaciones estructurales para identificar las asociaciones y relaciones para la RSC. La evaluación de este modelo de ecuaciones estructurales y su validación a través del análisis factorial confirmatorio permitió constatar, como principales conclusiones, que la responsabilidad social corporativa presenta un desarrollo condicionado por un enfoque multidimensional, donde las variables internas de la organización muestran un nivel significativo de correlación con la RSC reconocida por los clientes de la organización, como son el liderazgo, la orientación estratégica, el diseño organizacional, la comunicación, el desarrollo de competencias profesionales, los valores organizacionales y la satisfacción laboral, y guardan una estrecha relación con las investigaciones precedentes.

Palabras clave: responsabilidad social corporativa, ecuaciones estructurales, liderazgo, estrategia de negocios, diseño organizacional, comunicación, competencias laborales, valores organizacionales, satisfacción laboral.

Introduction and state of the art

Corporate social responsibility (CSR) is made up of strategic factors in companies aimed at improving social, economic and environmental conditions (Caro Méndez and Ojeda Hidalgo, 2019; Orjuela Córdoba, 2011). This is confirmed by the Foundation of the European Union, Latin America and the Caribbean (EU-LAC), which considers CSR:

> As an ongoing commitment to act ethically and contribute to economic growth, while improving the quality of life for the workforce and their families, the local community, and society. (EU-LAC, 2019, p.11)

Considered as a strategic factor for the survival and development of organizations (Soliz Aguayo, 2017; Rodríguez Cala *et al.,* 2019; Ibarra Padilla, 2014; Carrillo Punina, 2017), CSR is not a recent phenomenon, but it has gained interest in recent years (Akyıldız, 2021; Barchiesi and Fronzetti Colladon, 2021; Bhumika *et al.,* 2022; Jouber, 2022; Tosun *et al.,* 2022; Al-Shammari *et al.,* 2022; Anlesinya and Abugre, 2022; Blasi and Sedita, 2022; Conte *et al.,* 2022; Camilleri, 2022; Kim, 2022; Karatas-Ozkan *et al.,* 2022; Madero Gómez *et al.,* 2022; Rintala *et al.,* 2022; Miethlich *et al.,* 2022; Silva *et al.,* 2022). It has become a new management for organizations worldwide, reason for which the World Business Council for Sustainable Development (WBCSD) has designed a group of company-level strategies focused on the principles of CSR (Soliz Aguayo, 2017).

The Cuban telecommunications company ETECSA offers a wide range of services to the population: free and public wifi connection areas, fixed phone services, internet data ("nauta-hogar"), internet browsing room, mobile services, e-commerce applications ("transfermóvil"), among others. It is the company's need and social responsibility to guarantee that these telecommunications services are relevant, significant for the company and relevant for society, while maintaining a favorable attitude in their relationship with the environment. In short, it is necessary to convert long-term orientations into social objectives and needs.

The development of a socially responsible activity will allow the organization to contribute to sustainability, to increase its market share, and to obtain economic benefits; achieving the objectives oriented to technological development, innovation, structure and processes, with the purpose of creating value for customers that differentiates the company from its competitors, in order to respond in a timely and effective manner, benefiting business performance and promoting social impact (Espinoza-Santeli, 2018).

CSR activities are supported by initiatives that go beyond compliance with laws and economic issues, in which the contribution to the triple helix sustainability model is recognized: economic, social and environmental (Soliz Aguayo, 2017; Soto Alemán and Batista Torres, 2020; Ibarra Padilla, 2014; Ríos *et al.,* 2019; Ochoa Rivera and Caisa Yucailla, 2019; López Salazar *et al.,* 2017). CSR should be part of the strategic

planning of companies (Cruz Botache et al., 2020; Antúnez Sánchez and Díaz Ocampo, 2017), since, in addition to generating benefits Carrillo Punina, 2017), it constitutes a key exercise in their evolution (Duque Orozco *et al.*, 2013). Indeed, an important element to take into account in this research.

Therefore, an organization called "socially responsible" ensures its long-term sustainability (Burgos Romero, 2018) and carries out activities aimed at satisfying the needs and expectations of its internal and external stakeholders, as well as the care and preservation of the environment (Saldarriaga Ríos, 2013; Murillo Barrera *et al.*, 2017; Ramos Grijalva *et al.*, 2021).

Although the CSR concept has evolved, its main fundamentals and precepts have persisted from the early 1950s to the present (Limo Silva and Peña Avilés, 2019). With the purpose of analyzing the associated trends and concepts, 99 investigations were studied. The first theoretical contributions to the CSR approach were made by Bowen (1953), who is considered the father of corporate social responsibility due to his important contributions in this area (Carroll, 1999). This author conceives social responsibility as "the new field available to businessmen to guide and make decisions based on the expectations, objectives and values of society" (Carroll, 1999, p. 270).

A search in the Scopus database, under the following criteria: TITLE-ABS-KEY ("corporate social responsibility") and (LIMIT-TO (SUBJAREA, "SOCI")) and (LIMIT-TO (DOCTYPE, "article")), showed that the first publication related with corporate social responsibility dates back to 1972 with the publication of Votaw (1972). From then to date, its trend has been growing, although to a lesser extent than other areas. Initially, it was a bit slow, with only 178 publications up to 2000. At present, more than 20 000 publications are registered in this database, of which 8437 are directly related to the social sciences and 6976 to scientific articles.

Two observations are established from the analysis of Figure 1: according to the keywords, the main research is oriented towards the manifestation or result of social responsibility in the organization's environment, delving into aspects such as economic and social effects (Sharma and Sathish, 2022), sustainability (Batat, 2021), environmental impact (Huang, 2022), among other aspects of organizations. Similarly, it is observed that the subject is interesting in different continents and that collaborative relationships are established between them (Perera and Hewege, 2022; Pündrich *et al.*, 2021; Rao and Tilt, 2021).

According to the available publications, the achievement of CSR is recognized from different aspects: the provision of a quality service in accordance with customer requirements (Afzali and Kim, 2021; Ahn and Lu, 2021; Akbari *et al.*, 2020), responding to the demands of environmental conservation (Adomako and Nguyen, 2020; Alda, 2019) and the contribution to the development of the territory, in its different scales of analysis (Bhatia and Makkar, 2020; Boğan *et al.*, 2020). Similarly, there is a group of variables in the organization whose behavior conditions the development degree of CSR, among these are: the leadership exercised by the directive and the way in which this promotes socially responsible behavior (Aftab *et al.*, 2021; Bardos *et al.*, 2020). Likewise, the influence of organizational values, both of managers and workers, is recognized, assumed and observed (Hoepner and Schopohl, 2020; Kim *et al.*, 2019), as well as the influence of social values on organizational values (Kim *et al.*, 2019).

Regarding the projection of the leaders as a manifestation of their positions, there is another variable of influence: the conception and strategic conduction of the organization from the vision, mission or work objectives (Abugre and Anlesinya, 2020; Bhatia *et al.*, 2020). Closely related, and as a way to guarantee the achievement of the guiding objectives, the conception of the organizational design applied in the organization (Donnelly and Wickham, 2020; García-Castillo *et al.*, 2020) and the organizational communication processes (Park and Kang, 2020; Pérez *et al.*, 2020) are also highlighted.

At a more operational level, the influence of workers can be distinguished, especially from two basic aspects: their professional competencies (Jamal *et al.*, 2021; Osagie *et al.*, 2019) and

their job satisfaction (Nejati *et al.*, 2020; Schaefer *et al.*, 2020). To the extent that workers are more competent and satisfied, their performance should be more favorable and consequently the company will be more responsive to social demands.

Figure 1

Characterization of trends in social responsibility-related publications
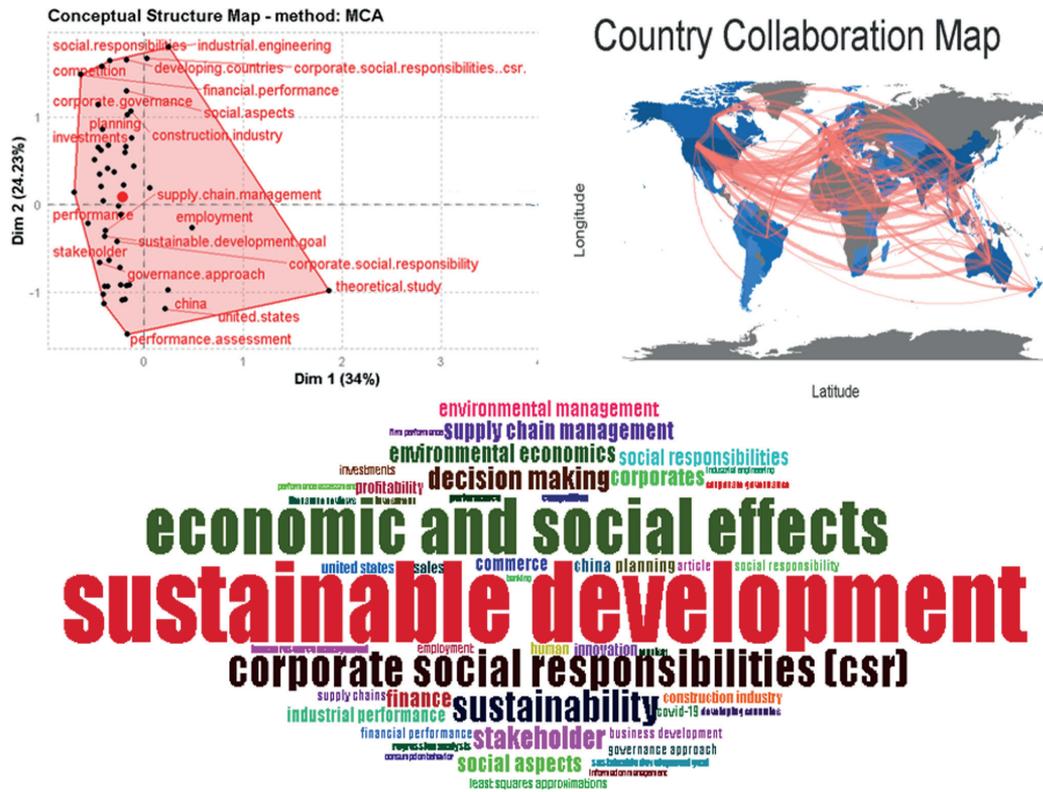
Note. Output from bibliometrix (RStudio).

Table 1 shows the variables studied from the internal perspective, which is the focus of research that seeks to analyze how these variables are related to corporate social responsibility.

Table 1

Internal variables influencing corporate social responsibility

Variables	Authors
Leadership	(Bhumika *et al.*, 2022; Jouber, 2022; Tosun *et al.*, 2022)
Organizational values	(Al-Shammari *et al.*, 2022; Barchiesi and Fronzetti Colladon, 2021; Foncubierta-Rodríguez, 2022)
Strategic conception	(Akyıldız, 2021, 2021; Anlesinya and Abugre, 2022)
Organizational design	(Blasi & Sedita, 2022; Conte *et al.*, 2022; Köseoglu *et al.*, 2021)

Institutional communication	(Camilleri, 2022; Kim, 2022; LaVan *et al.*, 2022)
Work competencies	(Karatas-Ozkan *et al.*, 2022; Madero Gómez *et al.*, 2022; Rintala *et al.*, 2022)
Job satisfaction	(Miethlich *et al.*, 2022; Silva *et al.*, 2022; Trivellas *et al.*, 2021)

The following conclusions can be drawn from the above analysis: there is greater focus on the external aspects of social responsibility and its impact on the environment; the various internal variables that may influence the manifestation degree or development of social responsibility are analyzed to a lesser extent; however, no research was found, at least explicitly, where the relationship between the various internal dimensions and their relationship with social responsibility is structured. Based on this theoretical analysis, the research problem was oriented to answer the question: What correlation level exists between the variables that condition the degree of corporate social responsibility of the organization under study? To contribute to the solution of this problem, the following research objective was defined: to construct a structural equation model to identify the internal variables that impact CSR in order to design an action plan to facilitate intervention in these variables and thus favor the increase of the dependent variable.

Methodology

The methodology applied in this research responds the quantitative paradigm at a correlational level by means of a structural equation analysis related with the variables under study and the field modality.

Based on the review of the referential framework, the research activities were oriented to verify following hypotheses:

> H1: There is a direct relationship between top management leadership and the CSR level recognized by external stakeholders.
> H2: There is a direct relationship between organizational values and the CSR level recognized by external stakeholders.
> H3: There is a direct relationship between the strategic conception and the CSR level recognized by external stakeholders.

H4: There is a direct relationship between organizational design and the CSR level recognized by external stakeholders.
H5: There is a direct relationship between the effectiveness perception of institutional communication and the CSR level recognized by stakeholders outside the organization.
H6: There is a direct relationship between job competencies and the CSR level recognized by stakeholders outside the organization.
H7: There is a direct relationship between job satisfaction and the CSR level recognized by external stakeholders.
Once the hypotheses to be verified were formulated, the following steps were applied:

Design of research instruments

Several types of research instruments were applied. The first was aimed at determining the perception of the development degree of CSR according to the criteria of the stakeholders. This instrument assessed the recognition degree of three fundamental variables: customer orientation; contribution to territorial development; and environmental impact.

In general, these three variables were evaluated through 26 questions (nine for customer orientation, seven for environmental impact and ten for contribution to territorial development), using a statement on the variable under analysis to be evaluated through a seven-classification Likert scale (strongly agree, agree, partially agree, undecided, disagree, strongly disagree, and partially disagree). The reliability of the instrument was evaluated once the instrument was applied using Cronbach's Alpha coefficient, which in general reached a value of 0.875, and in no case it showed values lower than 0.828 when eliminating the different items.

Seven instruments were designed for evaluating the independent variables, one for each independent variable, as described in Table 1. The definition of the items to be considered in

each of the variables and the face and content validity of the instruments were analyzed through work with experts. The group of experts was made up of seven doctors of science related to the field of Management, with more than ten years of experience in academia and with experience in business consulting work. Likewise, the reliability of the instruments designed was evaluated through Cronbach's Alpha coefficient, as shown in Table 2.

Table 2

General characterization of the instruments applied by variables

Variables	Subvariables	Number of items	Cronbach's alpha of the instrument
Leadership	Attitudes	9	0.876
	Skills	9	
	Participation	10	
Strategy	Mission	5	0.882
	Vision	5	
	Objectives	5	
	Performance	5	
	Context	5	
Organizational values	Declared	14	0.925
	Shared	14	
Communication	Vertical (upward and downward)	10	0.863
	Intradepartmental	9	
	Interdepartmental	9	
Organizational design	Functions	9	0.838
	Processes	9	
	Responsibilities	10	
Competencies	Skills	6	0.817
	Training	6	
	Team work	6	
	Innovation	5	
	Commitment	5	
Job satisfaction	Work content	7	0.912
	Group work	8	
	Stimulation	7	
	Working and welfare conditions	6	

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The content validity of the different instruments was assessed by consulting seven experts, all with a PhD, with more than ten years of teaching experience and with research results in the field of study.

Sample selection and characterization

The population is made up of 778 workers, composed of different strata in terms of sex, age, years of seniority in the organization and occupational category. To define the total sample size, the expression established for these purposes for finite populations and random probability sampling was applied, establishing a sample size of 256 people.

Once the sample size was defined, a proportional stratified sampling was established according to the composition of the existing strata. Table 3 presents the general characterization of the population and the sample.

Table 3
Sample composition

Internal population		Population	%	Sample
Strata	Total	778	32.90	256
Sex	Male	352	45.24	116
	Female	426	54.75	140
Occupational category	Managers	48	6.161	16
	Technicians	191	24.55	63
	Operators	539	69.28	177
Years of experience	Less than 1 year	198	25.44	65
	From 1 to 5 years	231	29.69	76
	More than 5 years	349	44.85	115

Processing of results

The processing of the results was divided into four steps, beginning with the behavior characterization of the variables under analysis.

Structural Equation Model Construction

Considering that there are statistical procedures that do not offer an advantageous way to differentiate between observable and latent variables, the application of the structural equation model is justified since it allows testing theoretical models with empirical data. IBM SPSS AMOS 23 professional software was used to build the model. The proposed model (Figure 2) responds to the results found in the literature review and supports the hypotheses of the proposed research.

Figure 2
Proposed model
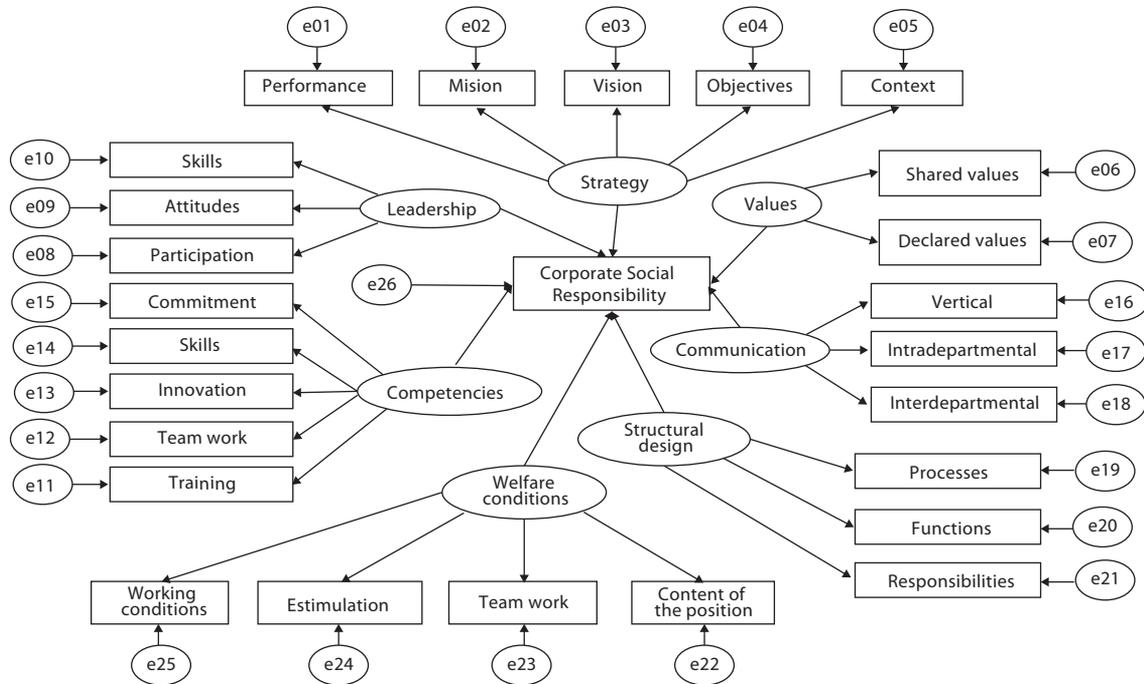
Model evaluation

To evaluate the model obtained, the indicators established for this purpose will be used, which are summarized in Table 4.

Table 4
Indicators for evaluating the value of the generated model

Indicators	Acronyms	Contrast value
Chi-square value/degrees of freedom	CMIN/DF	< 3- Good
Probability level associated with the Chi-square value	Pobabilistic level	> 0.05- Significant
Comparative fit index	CFI	> 0.95- Very good
Goodness-of-fit index	GFI	> 0.95- Excellent > 0.90- Traditional > 0.80- Permissible
Adjusted goodness-of-fit index	AGFI	> 0.80- Acceptable
Mean square error of approximation	RMSEA	< 0.05- Good 0.05 a 0.10- Moderate
Probability of perfect fit	PCLOSE	> 0.05- Significant

Once the model has been identified and estimated, the fit of the data to the proposed model is evaluated, for which three alternatives are followed: fit evaluation of the global model, fit evaluation of the measurement model and fit evaluation of the structural model (Salgado Beltrán, 2009).

Model validation

The validation of the model was carried out through a confirmatory factor analysis following the recommendations of Hair *et al.* (1999).

Results

Table 5 shows the results of the general evaluation of the variables analyzed. According to the values obtained in relation to CSR, there is a good performance, mainly in relation to environmental management. The greatest difficulties are in the perception of the clients, where difficulties stand out, such as: not being able to respond to the totality of the demand, the existence of high access costs, instability of services for some residential areas, among other aspects. Likewise, a satisfactory value is obtained in terms of the community's perception, given that the institution makes important and recognized contributions to society in general.

Table 5
Status of the variables evaluated

Variables	Subvariables	Mean of the subvariable	Mean of the variable
Corporate Social Responsibility	Customers	5.6	6.1
	Community	6.1	
	Environment	6.8	
Leadership	Attitudes	5.3	5.0
	Skills	5.6	
	Participation	4.2	
Strategy	Mission	3.4	3.7
	Vision	3.4	
	Objectives	4.0	
	Performance	3.3	
	Context	4.6	
Organizational Values	Declared	5.2	4.5
	Shared	3.7	
Communication	Vertical (upward and downward)	3.9	3.7
	Intradepartmental	3.9	
	Interdepartmental	3.4	
Organizational Design	Functions	5.1	4.6
	Processes	4.7	
	Responsibilities	4.1	

	Skills	4.2	
	Training	4.3	
Competencies	Team work	4.2	3.8
	Innovation	2.8	
	Commitment	3.6	
	Work content	4.1	
Job satisfaction	Group work	4.2	4.3
	Stimulation	4.8	
	Working and welfare conditions	4.0	

When analyzing the independent variables, the individual values are lower than those of CSR, showing that CSR is achieved as a result of the systemic combination of the independent variables. The most affected variables are: strategic orientation, organizational communication and mastery of competencies.

Strategic orientation is affected by performance levels that do not show satisfactory results, as well as the low level of recognition and identification with the stated mission and vision. The greatest difficulties in communication are observed among employees from different work areas, who must coordinate their individual efforts in function of the collective result. In terms of competencies, the most affected were: innovation and commitment.

On the other hand, the best evaluated latent variables were leadership, organizational design and job satisfaction. The perception by workers of the existence of attitudes and aptitudes in their leaders that favor work and give them power over the collective is a strength for the achievement of CSR. Similarly, the recognition of a favorable organizational design is an important factor in achieving the objective.

The existence of shared values and levels of job satisfaction shows a relatively satisfactory behavior, while at the same time demonstrates the existence of reserves for improvement in relation to working conditions and the need to implement actions to guarantee that the values stated or recognized as necessary or important are really assumed and are part of the decision criteria, as well as the behavior of the workers.

Once the state of the variables under analysis was characterized, compliance with the model presented in the methodology was evaluated to verify compliance with the research hypotheses formulated. IBM SPSS AMOS 23 software was used for this purpose. The results obtained are shown in Figure 3.

The values observed suggest that the model generated represents the influences of the latent variables found in CSR. According to the results, the variables that make up each of the dimensions have high or acceptable relationship degrees with the latent variable to which they belong, and there are significant levels of influence between them. However, the latent variables found vary in their level of influence on CSR in a generalized way.

As can be seen, the correlation levels between the dimensions under analysis and corporate social responsibility as a dependent variable range from 0.58 (labor competencies H6) to 0.86 (leadership H1); the rest of the hypotheses formulated are observed with intermediate values. According to these results, the eight hypotheses formulated are fulfilled by showing significant correlation levels with the dependent variable, in accordance with the criteria of Hair *et al*. (1999).

The greatest influence is observed in the variables strategies and leadership, both of which are directly related to the activity of top management and the orientation sought to achieve in the organization. On the other hand, the variables more related to the workers, such as the

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degree to which the declared values are shared, the development level of competencies and job satisfaction show values with a less significant influence on the dependent variable, although in all cases the values exceed the value of 0.5, so it can be affirmed that the model initially projected is fulfilled under the conditions existing in the entity under study.

Figure 3
Structural equation model
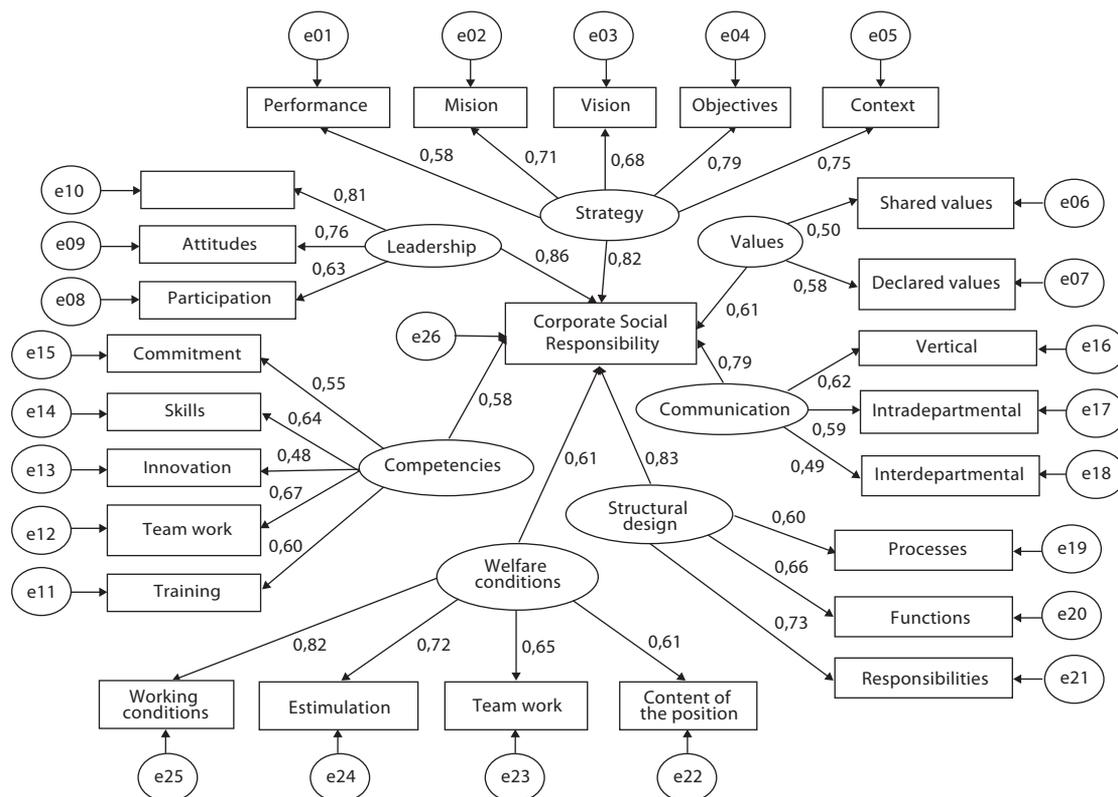
The fit indicators of the model analyzed are summarized in Table 6, according to which it can be stated that the relationships between the variables constitute a good model, since all the fit indicators comply with the established parameters except the GFI (0.834), which only achieves a permissible value (> 0.80) and the RMSEA (0.052), whose behavior is qualified as moderate (0.05-0.10).

Table 6
Model fit indicators

Indicators	Value reached	Evaluation
CMIN/DF	2.341	Good
Probabilistic model	0.301	Significant
CFI	0.904	Very Good

GFI	0.834	Permissible
AGFI	0.809	Acceptable
RMSEA	0.073	Moderate
PCLOSE	0.058	Significant

In accordance with the methodology, a confirmatory factor analysis was applied, using IBM SPSS 23 software for this purpose. In this table, only factor loadings above 0.70 are considered. The extraction method was: principal component analysis; the rotation method: Varimax with Kaiser normalization (convergent rotation in five iterations); the Kaiser-Meyer-Olkin sample adequacy measure equal to 0.876; Bartlett's sphericity test. Chi-square equal to 1 568.672, with Sig.:0.000; and total variance explained equal to 75.791.

Table 7
Rotated Component Matrix

| Variables	F1	F2	F3	F4
Attitudes	0.082	0.324	0.241	0.759
Skills	0.322	0.345	0.308	**0.689**
Participation	0.157	0.286	0.272	**0.631**
Mission	0.054	0.074	0.171	**0.807**
Vision	-0.141	0.061	0.247	**0.748**
Objectives	-0.321	-0.114	0.418	**0.712**
Performance	0.114	0.225	0.171	**0.694**
Context	0.093	0.232	0.341	**0.716**
Declared	0.214	0.314	**0.753**	0.230
Shared	0.182	0.315	**0.716**	0.156
Vertical (upward and downward)	0.242	**0.714**	0.175	0.185
Intradepartmental	0.313	**0.739**	0.253	-0.038
Interdepartmental	0.294	**0.744**	0.297	0.019
Functions	0.204	**0.813**	0.150	-0.062
Processes	0.321	**0.717**	0.321	-0.015
Responsibilities	0.366	**0.749**	0.150	0.137
Skills	**0.687**	0.262	0.196	-0.205
Training	**0.794**	0.263	0.162	-0.176
Team work	**0.825**	0.316	0.157	0.214
Innovation	**0.704**	0.136	0.142	-0.209
Commitment	**0.773**	0.165	0.178	0.235
Work content	0.163	0.167	**0.747**	0.923
Group work	0.257	0.327	**0.751**	-0.136
Stimulation	0.147	0.301	**0.816**	0.156
Working and welfare conditions	0.173	0.344	**0.723**	0.119

According to the values of the validity indicators of the factor analysis, it is satisfactory. The principal component extraction method and the varimax rotation method were applied. The KMO value showed a high value, relatively close to unity, and Bartlett's sphericity test showed a satisfactory validity significance.

As can be seen, the observed variables are distributed in four factors, showing a relatively expected grouping due to their level of relationship. According to the factor loadings, factor 1 groups the variables related to workers' competencies (skills, training, teamwork, innovation and commitment). Factor 2 combines the variables of organizational design (functions, processes and responsibilities) and communication (vertical, inter- and intra-departmental), which by their very nature are directly interrelated according to the criteria of Robbins and Judge (2009). As in factor 3, the variables related to job satisfaction (job content, group work, stimulation and working conditions) and the values (stated and shared) of the workers are grouped together. Finally, the fourth factor includes variables related to top management (attitudes, skills, participation) in terms of strategic conception and leadership (mission, vision, objectives, performance and context). Figure 4 shows the rotated component graph.

Figure 4

Component chart of rotated space components
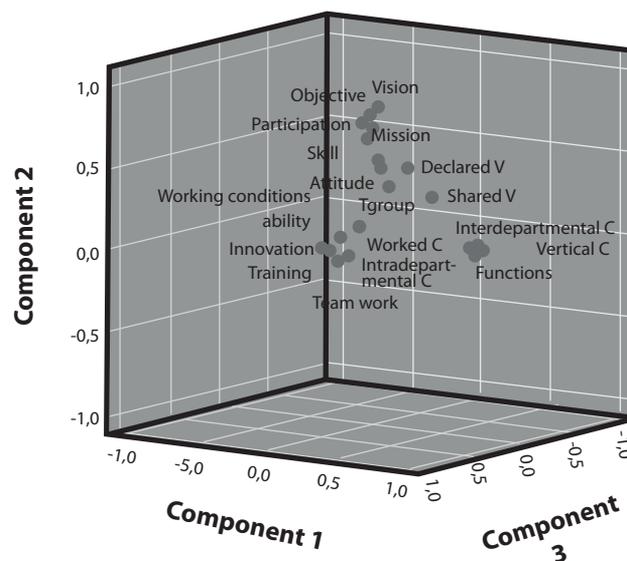
However, it should be noted that the grouping of the factor analysis did not show the same distribution in factors or dimensions that was modeled in the structural equation analysis. However, the same variables were included in both analyses, and in the factor analysis, despite variations in the number of factors, variables of the same dimension were grouped in the same factor. Therefore, despite the differences, it can be concluded that the factor analysis corroborates the structural equation model.

Discussion and conclusions

The results observed in the study are closely related to previous research, corroborating that corporate social responsibility is a variable whose development is conditioned by a multidimensional approach where variables related to top management are observed, such as leadership (Aftab *et al.,* 2021; Bardos *et al.,* 2020), the strategic conception of the organization (Abugre and Anlesinya, 2020; Bhatia *et al.,* 2020) and the orga-

nizational design implemented to achieve these strategic objectives (Donnelly and Wickham, 2020; García-Castillo *et al.,* 2020), as well as the organizational communication processes (Park and Kang, 2020; Pérez *et al.,* 2020) that derive from the materialization of the implemented organizational design and the action of the leaders.

The structure observed in the structural equation model, the evaluation indicators that corroborate its validity and its validation through confirmatory factor analysis allow to corroborate that corporate social responsibility is a variable that manifests itself positively from the influence and interaction of a group of internal dimensions. In this sense, the model recognizes that the variable that shows the highest level of relationship with the dependent variable is leadership, a result that corresponds to the previous results.

Likewise, at a more general and operational level, corporate social responsibility is also impacted by variables associated with workers, such as their values (Hoepner and Schopohl, 2020; Kim *et al.,* 2019), as well as the influence of social values on organizational values (Kim *et al.,* 2019), their level of job satisfaction (Nejati *et al.,* 2020; Schaefer *et al.,* 2020) or the development of job competencies (Jamal *et al.,* 2021; Osagie *et al.,* 2019). All of the above allowed corroborating the research hypotheses.

The influence of leadership on the dependent variable was the most significant with a correlation of 0.86. Leadership is the most investigated variable from the internal perspective regarding social responsibility, corroborating the approaches of previous research (Bhumika *et al.,* 2022; Jouber, 2022; Tosun *et al.,* 2022); additionally, a high correlation level was observed for the strategic conception variable, which is an indirect expression of leadership orientation; this result also agrees with other research (Akyıldız, 2021; Anlesinya and Abugre, 2022). Organizational design is the third dimension with the greatest influence, and the organizational structure is usually adapted to the strategic conception; other previous researches were identified in the state of the art, corroborating this result (Blasi and Sedita, 2022; Conte *et al.,* 2022; Köseoglu *et al.,* 2021).

Organizational values and institutional communication were two other dimensions that showed significant correlation levels. Both are influenced by the behavior of the dimensions previously analyzed and have been the subject of analysis and corroboration of their influence by previous research (Barchiesi and Fronzetti Colladon, 2021; Camilleri, 2022; Kim, 2022; LaVan *et al.,* 2022; Miethlich *et al.,* 2022; Al-Shammari *et al.,* 2022; Foncubierta-Rodríguez, 2022).

With a less significant correlation value but still significant are the development of job satisfaction and job competencies, variables with less recognition and depth in previous research (Trivellas *et al.,* 2021; Karatas-Ozkan *et al.,* 2022; Madero Gómez *et al.,* 2022; Rintala *et al.,* 2022; Miethlich *et al.,* 2022; Silva *et al.,* 2022).

Based on the above, it can be concluded that the objective of the research was achieved by constructing a structural equation model that allows corroborating the internal variables that influence the achievement of the desired CSR behavior. Similarly, it was possible to establish that leadership, strategic conception, organizational design, shared values, internal communication, mastery of labor competencies and satisfaction experienced by workers are internal variables of the organization, showing a significant correlation level with the CSR recognized by the organization's customers.

Although the research objectives were achieved and the research hypotheses formulated were validated, it should be noted that the results obtained are limited by the nature of the sample used. It would be important to extend the validation of the model in other contexts to verify its compliance or to identify necessary changes in its conception and structure that would justify its potential for generalization.

It must be understood that this research only assessed CSR from the internal perception of employees. The external view of CSR, i.e., from the perception of end customers, was not considered. However, job satisfaction shows a dual character: on the one hand, the creation of conditions conducive to job satisfaction is a manifestation of CSR compliance; on the other hand, to the extent that acceptable levels of job satisfaction are achieved, higher levels of CSR can be attained. This dichotomy could be the subject of further research.

References

Abugre, J. B. and Anlesinya, A. (2020). Corporate social responsibility strategy and economic businss value of multinational companies in emerging economies: The mediating role of corporate reputation. *Business Strategy and Development, 3*(1), 4-15. https://doi.org/10.1002/bsd.70

Adomako, S. and Nguyen, N.P. (2020). Interfirm collaboration and corporate social responsibility expenditure in turbulent environments: The moderating role of entrepreneurial orientation. *Corporate Social Responsibility and Environmental Management, 27*(6), 2668-2678. https://doi.org/10.1002/csr.1991

Aftab, J., Sarwar, H., Amin, A. and Kiran, A. (2021). Does CSR mediate the nexus of ethical leadership and employee's job performance? Evidence from North Italy SMEs. *Social Responsibility Journal*. https://doi.org/10.1108/srj-09-2020-0393

Afzali, H. and Kim, S. S. (2021). Consumers' responses to corporate social responsibility: The mediating role of csr authenticity. *Sustainability (Switzerland), 13*(4), 1-13. https://doi.org/10.3390/su13042224

Ahn, J. and Lu, S. (2021). Examining the relative role of CSR activity and service experience on cruise customers' behavior. *Social Responsibility Journal*. https://doi.org/10.1108/srj-07-2020-0298

Akbari, M., Nazarian, A., Foroudi, P., Seyyed Amiri, N. and Ezatabadipoor, E. (2020). How corporate social responsibility contributes to strengthening brand loyalty, hotel positioning and intention to revisit? *Current Issues in Tourism*. https://doi.org/10.1080/13683500.2020.1800601

Akyıldız, F. (2021). CSR and Turkish Universities in ARWU 2018: An evaluation of the strategic plans and performance reports. *Eurasian Studies in Business and Economics, 20*, 321-341. https://doi.org/10.1007/978-3-030-85304-4_20

Alda, M. (2019). Corporate sustainability and institutional shareholders: The pressure of social responsible pension funds on environmental firm practices. *Business Strategy and the Environment, 28*(6), 1060-1071. https://doi.org/10.1002/bse.2301

Al-Shammari, M. A., Banerjee, S., Shah, T., Doty, H. and Al-Shammari, H. (2022). The value of expertise: How chief executive officer and board corporate social responsibility expertise enhance the financial effects of firms' corporate social responsibility initiatives. *Society and Business Review* (ahead-of-print). https://doi.org/10.1108/SBR-10-2021-0183

Anlesinya, A. and Abugre, J. B. (2022). Strategic CSR practices, strategic orientation and business value creation among multinational subsidiaries in Ghana. *Society and Business Review, 17*(2), 257-279. https://doi.org/10.1108/SBR-02-2021-0021

Antúnez Sánchez, A. and Díaz Ocampo, E. (2017). La responsabilidad social y medio ambiental de la empresa: una perspectiva desde Cuba. *Revista de Responsabilidad Social de la Empresa, 27*. https://bit.ly/3piG2m0

Barchiesi, M. A. and Fronzetti Colladon, A. (2021). Corporate core values and social responsibility: What really matters to whom. *Technological Forecasting and Social Change, 170*. https://doi.org/10.1016/j.techfore.2021.120907

Bardos, K., Gupta, N. and Hughenhughen, L. (2020). Stock price reaction to being named an international sustainability leader. *International Journal of Sustainability in Economic, Social, and Cultural Context, 16*(2), 15-28. https://doi.org/10.18848/2325-1115/CGP/v16i02/15-28

Batat, W. (2021). A phenomenological exploration into sustainability in the foodservice industry in the MEA region. *Journal of Services Marketing, 35*(7), 918-932. https://doi.org/10.1108/JSM-06-2020-0243

Bhumika, Priya, K. R. and Sinha, A. K. (2022). Underpinnings of social contributions: Conceptualizing behavioral patterns among socially contributive leaders in India. *Social Responsibility Journal, 18*(2), 221-239. https://doi.org/10.1108/SRJ-09-2019-0311

Blasi, S. and Sedita, S. R. (2022). Mapping the emergence of a new organizational form: An exploration of the intellectual structure of the B Corp research. *Corporate Social Responsibility and Environmental Management, 29*(1), 107-123. https://doi.org/10.1002/csr.2187

Bhatia, A. y Makkar, B. (2020). Stage of development of a country and CSR disclosure-the latent driving forces. *International Journal of Law and Management, 62*(5), 467-493. https://doi.org/10.1108/ijlma-03-2020-0068

Bhatia, S., Gupta, G. and Tripathy, A. (2020). The strategic corporate social responsibility (CSR) quandary: an instructional case. *Emerald Emerging Markets Case Studies, 10*(3), 1-30. https://doi.org/10.1108/eemcs-12-2019-0344

Boğan, E., Dedeoğlu, B. B. and Balıkçıoğlu Dedeoğlu, S. (2020). The effect of residents' perception of hotel social responsibility on overall attitude toward tourism. *Tourism Review*. https://doi.org/10.1108/tr-08-2019-0353

Cruz Botache, L. P., Vélez Romero, C. A. and Romero Restrepo, M. (2020). Beneficios tributarios por

la adopción de políticas de responsabilidad social empresarial (RSE). *Dictamen Libre, 26*.

Bowen, H. R. (1953). *Social responsabilities of the businessman*. Harper & Row.

Burgos Romero, C. (2018). La Responsabilidad Social o sostenibilidad: un enfoque desde el entorno y la comunicación. *Revista de Ciencias de la Administración y Economía, 8*(16), 47-60. https://doi.org/10.17163/ret.n16.2018.04

Carroll, A. B. (1999). Corporate social responsibility: evolution of a definitional construct. *Business & Society, 38*(3), 268-295. https://doi.org/10.1177/000765039903800303

Camilleri, M. A. (2022). Walking the talk about corporate social responsibility communication: An elaboration likelihood model perspective. *Business Ethics, Environment and Responsibility*. https://bit.ly/3PhVGJ2

Caro Méndez, C. G. and Ojeda Hidalgo, J. F. (2019). Responsabilidad Social y clima organizacional en la Universidad Autónoma de Nayarit. *Proyecciones, 13*. https://doi.org/10.24215/26185474e002

Carrillo Punina, Á. (2017). Responsabilidad social en las pymes latinoamericanas y españolas: limitaciones, objetivos y estrategias. *CienciAmérica, 6*(2), 61-65. https://bit.ly/3JLJMpO

Conte, F., Sardanelli, D., Vollero, A. and Siano, A. (2022). CSR signaling in controversial and noncontroversial industries: CSR policies, governance structures, and transparency tools. *European Management Journal*. https://doi.org/10.1016/j.emj.2021.12.003

Donnelly, T. and Wickham, M. (2020). Exploring the antecedent resources and capabilities of strategic corporate social responsibility. *Social Responsibility Journal*. https://doi.org/10.1108/srj-12-2018-0334

Duque Orozco, Y., Cardona Acevedo, M. and Rendón Acevedo, J. A. (2013). Responsabilidad Social Empresarial: Teorías, índices, estándares y certificaciones. *Cuadernos de Administración, 29*(50). https://bit.ly/3BWBMQZ

Espinoza-Santeli, M. G. (2018). Percepción sobre las empresas socialmente responsables en Distrito Metropolitano de Quito. *PODIUM,* (33), 35-44. https://doi.org/10.31095/podium.2018.33.4

EU-LAC (2019). *Responsabilidad social empresarial y objetivos de desarrollo sostenible en la Unión Europea, Anérica Latina y el Caribe. Planes nacionales de acción y políticas públicas para promover la sustentabilidad*. EU-LAC Fundation.

Foncubierta-Rodríguez, M. J. (2022). Influence of the entrepreneur's personal values in business governance style and their relationship with happiness at work. *Corporate Governance (Bingley), 22*(3), 592-617. https://doi.org/10.1108/CG-05-2021-0197

García-Castillo, N., Bueno-Doral, T. and Hänninen, L. I. (2020). Responsible research and innovation (Rri) as a driving force for change in corporate communication: New forms of governance and participatory structures. *Profesional de la Informacion, 29*(3), 1-9. https://doi.org/10.3145/epi.2020.may.13

Hair, J. F., Anderson, R. E. and Tatham, R. L. (1999). *Análisis multivariante*. 5ta ed. Prentice Hall.

Hoepner, A. and Schopohl, L. (2020). State pension funds and corporate social responsibility: Do beneficiaries' political values influence funds' investment decisions? *Journal of Business Ethics, 165*(3), 489-516. https://doi.org/10.1007/s10551-018-4091-z

Huang, D. Z.-X. (2022). An integrated theory of the firm approach to environmental, social and governance performance. *Accounting and Finance, 62*(S1), 1567-1598. https://doi.org/10.1111/acfi.12832

Ibarra Padilla, A. M. (2014). Principios de la responsabilidad social empresarial en el ordenamiento jurídico colombiano. *Revista de Derecho, 41*, 51-82. https://bit.ly/3dpkG3I

Jamal, T., Zahid, M., Martins, J. M., Mata, M.N., Rahman, H. U. and Mata, P. N. (2021). Perceived green human resource management practices and corporate sustainability: Multigroup analysis and major industries perspectives. *Sustainability (Switzerland), 13*(6). https://doi.org/10.3390/su13063045

Jouber, H. (2022). Women leaders and corporate social performance: Do critical mass, CEO managerial ability and corporate governance matter? *Management Decision, 60*(5), 1185-1217. https://doi.org/10.1108/MD-07-2020-0953

Karatas-Ozkan, M., Özgören, Ç., Yamak, S., Ibrahim, S., Tunalıoğlu, M. N., Pinnington, A., Nicolopoulou, K. and Baruch, Y. (2022). Dual nature of the relationship between corporate social responsibility and human resource management: A blessing or a curse? *Corporate Social Responsibility and Environmental Management*. https://doi.org/10.1002/csr.2305

Kim, M., White, C. and Kim, C. (2019). Examining relationships among cultural factors and expectations of CSR. *Journal of Communication Management, 23*(4), 427-443. https://doi.org/10.1108/jcom-01-2019-0009

Kim, S. (2022). The Process of CSR Communication. Culture-Specific or Universal? Focusing on Mainland China and Hong Kong

Consumers. *International Journal of Business Communication, 59*(1), 56-82. https://doi.org/10.1177/2329488418805523

Köseoglu, M. A., Yee Yick, M. Y. and Parnell, J. A. (2021). The dissemination of corporate social responsibility into the intellectual structure of strategic management. *Journal of Cleaner Production, 311*. https://doi.org/10.1016/j.jclepro.2021.127505

LaVan, H., Zilic, I. and Basappa, S. (2022). Attitudes of employees in green companies regarding CSR communication. *International Journal of Manpower.* https://doi.org/10.1108/IJM-11-2020-0542

Limo Silva, G. and Peña Avilés, D. H. (2019). *El impacto de la responsabilidad social universitaria en la cultura organizacional de las universidades privadas en Lima metropolitana, año 2019.* Universidad Peruana de Ciencias Aplicadas.

López Salazar, A., Ojeda Hidalgo, J. F. and Ríos Manríquez, M. (2017). La responsabilidad social empresarial desde la percepción del capital humano. Estudio de un caso. *Revista de Contabilidad, 20*(1), 36-46. https://doi.org/10.1016/j.rcsar.2016.01.001

Madero Gómez, S., Olivas-Lujan, M. R., Rubio Leal, Y. L. and Yusliza, M. Y. (2022). Sustainable human resource management: Practitioners' perspectives. *Management Research, 20*(2), 111-128. https://doi.org/10.1108/MRJIAM-07-2021-1202

Miethlich, B., Beliakova, M., Voropaeva, L., Ustyuzhina, O. and Yurieva, T. (2022). Internal Corporate Policy: CSR and Employee Satisfaction. *Employee Responsibilities and Rights Journal*. https://doi.org/10.1007/s10672-022-09406-5

Murillo Barrera, C., Fajardo Puga, H. and Serrano Mantilla, H. (2017). Estrategias de responsabilidad corporativa aplicables en la gestión de los administradores de las pymes de la ciudad de Milagro. *PODIUM, (27),* 29-41. https://doi.org/10.31095/podium.2015.27.2

Nejati, M., Brown, M. E., Shafaei, A. and Seet, P. S. (2020). Employees' perceptions of corporate social responsibility and ethical leadership: are they uniquely related to turnover intention? *Social Responsibility Journal, 17*(2), 181-197. https://doi.org/10.1108/srj-08-2019-0276

Ochoa Rivera, R. E. and Caisa Yucailla, E. D. (2019). Responsabilidad social corporativa: estudio del comportamiento del consumidor del sector bananero de la provincia de Los Ríos Ecuador. *Universidad, Ciencia y Tecnología, 24*(96).

Orjuela Córdoba, S. (2011). La comunicación en la gestión de la Responsabilidad Social Empresarial. *Correspondencias & Análisis,* (1), 138-156. https://doi.org/10.24265/cian.2011.n1.09

Osagie, E. R., Wesselink, R., Blok, V. and Mulder, M. (2019). Contextualizing individual competencies for managing the corporate social responsibility adaptation process: the apparent influence of the business case logic. *Business and Society, 58*(2), 369-403. https://doi.org/10.1177/0007650316676270

Park, Y. E. and Kang, M. (2020). When crowdsourcing in CSR leads to dialogic communication: The effects of trust and distrust. *Public Relations Review, 46*(1). https://doi.org/10.1016/j.pubrev.2019.101867

Pérez, A., García de los Salmones, M. M. and Liu, M. T. (2020). Information specificity, social topic awareness and message authenticity in CSR communication. *Journal of Communication Management, 24*(1), 31-48. https://doi.org/10.1108/jcom-06-2019-0097

Perera, C. R. and Hewege, C. R. (2022). Internalising and internationalising country specific CSR practices of a Japanese multinational company. *Critical Perspectives on International Business, 18*(2), 201-223. https://doi.org/10.1108/cpoib-02-2019-0013

Pündrich, A. P., Aguilar Delgado, N. and Barin-Cruz, L. (2021). The use of corporate social responsibility in the recovery phase of crisis management: A case study in the Brazilian company Petrobras. *Journal of Cleaner Production, 329*. https://doi.org/10.1016/j.jclepro.2021.129741

Ramos Grijalva, R. D., Nieto Aguilar, W. G. and Zapata Álvarez, A. V. (2021). Preservación de la cultura, clima, identidad e imagen en la empresa ecuatoriana. *PODIUM,* (40), 75-88. https://doi.org/10.31095/podium.2021.40.5

Rao, K. K. and Tilt, C. (2021). Gender and CSR decisions: Perspectives from Australian boards. *Meditari Accountancy Research, 29*(1), 60-85. https://doi.org/10.1108/MEDAR-11-2019-0609

Rintala, O., Laari, S., Solakivi, T. and Töyli, J. (2022). Fulfilling expectations or overachieving: The role of market values in the linkage between environmental and financial performance. *Business Strategy and the Environment, 31*(3), 768-781. https://doi.org/10.1002/bse.2916

Ríos, M., Guevara, N., Álvarez, J. and Castro, M. (2019). Responsabilidad social empresarial: un análisis desde el ápice estratégico al núcleo operativo en la industria alimentaria de Cuenca-Ecuador. *Universidad, Ciencia y Tecnología, 23*(91).

Robbins, S. P. and Judge, T. A. (2009). *Comportamiento organizacional.* 13th ed. Pearson Educación.

Rodríguez Cala, A., Calle Rodríguez, C., Durán García, N., Zöllera, B. and Pons Rodríguez, A. (2019). Responsabilidad social corporativa en los centros de la red hospitalaria de utilización pública de Cataluña. *Gac Sanit., 35*(1). https://dx.doi.org/10.1016/j.gaceta.2019.06.001

Saldarriaga Ríos, J. G. (2013). Responsabilidad social y gestión del conocimiento como estrategias de gestión humana. *Estudios Gerenciales, 29*(126), 110-117. https://bit.ly/3QBA9Mr

Schaefer, S. D., Terlutter, R. and Diehl, S. (2020). Talking about CSR matters: employees' perception of and reaction to their company's CSR communication in four different CSR domains. *International Journal of Advertising, 39*(2), 191-212. https://doi.org/10.1080/02650487.2019.1593736

Sharma, E. and Sathish, M. (2022). "CSR leads to economic growth or not": An evidence-based study to link corporate social responsibility (CSR) activities of the Indian banking sector with economic growth of India. *Asian Journal of Business Ethics.* https://doi.org/10.1007/s13520-022-00142-5

Silva, P., Carrizo Moreira, A. and Mota, J. (2022). Employees' perception of corporate social responsibility and performance: The mediating roles of job satisfaction, organizational commitment and organizational trust. *Journal of Strategy and Management.* https://doi.org/10.1108/JSMA-10-2021-0213

Soliz Aguayo, N. (2017). La Responsabilidad Social Empresarial: caso Arca Continental. Ecuador. *Revista Publicando, 10*(2). https://bit.ly/3bI782Z

Soto Alemán, L. and Batista Torres, J. (2020). La responsabilidad social de la empresa estatal en el ejercicio pleno de los derechos de los trabajadores en la empresa estatal en Cuba. *Revista del Instituto de Ciencias Jurídicas de Puebla, México, 14*(45). https://doi.org/10.35487/rius.v14i45.2020.543

Tosun, C., Parvez, M. O., Bilim, Y. and Yu, L. (2022). Effects of green transformational leadership on green performance of employees via the mediating role of corporate social responsibility: Reflection from North Cyprus. *International Journal of Hospitality Management, 103.* https://doi.org/10.1016/j.ijhm.2022.103218

Trivellas, P., Dekoulou, P., Polychroniou, P. and Tokakis, V. (2021). Which leadership roles modify employee perceptions of CSR activities? Job satisfaction implications in the case of the tourism industry. *International Journal of Quality and Service Sciences, 13*(4), 618-636. https://doi.org/10.1108/IJQSS-04-2020-0054

Votaw, D. (1972). Genius becomes rare: A comment on the doctrine of social responsibility. *California Management Review, 15*(2), 25-31. https://doi.org/10.2307/41164415

Behavioral and psychological game theory: a systematic review

Methodology
A systematic review was carried out using the PRISMA methodology, collecting papers that presented psychological variables, were peer-reviewed and had an experimental design to identify all empirical studies published under both names.

Objective
This research clarifies whether two of these theories, behavioral game theory and psychological game theory are the same.

Introduction
Game theory has been widely used in economics. It has contributed to demonstrate that people do not only decide based on rational criteria, but that there are psychological variables that affect our decisions.

Result or conclusion 1
The largest number of articles were published under behavioral game theory.

Results or conclusion 2
Most of the articles were grouped according to Camerer's (2010) classification based on the following four themes: social preferences, cognitive hierarchy, quantitative response, and learning.

Result or conclusion 3
Both theories were presented under different names according to the origin of their main authors: economic (Camerer) or psychological (Geanakoplos, Battigalli and Balafoutas)
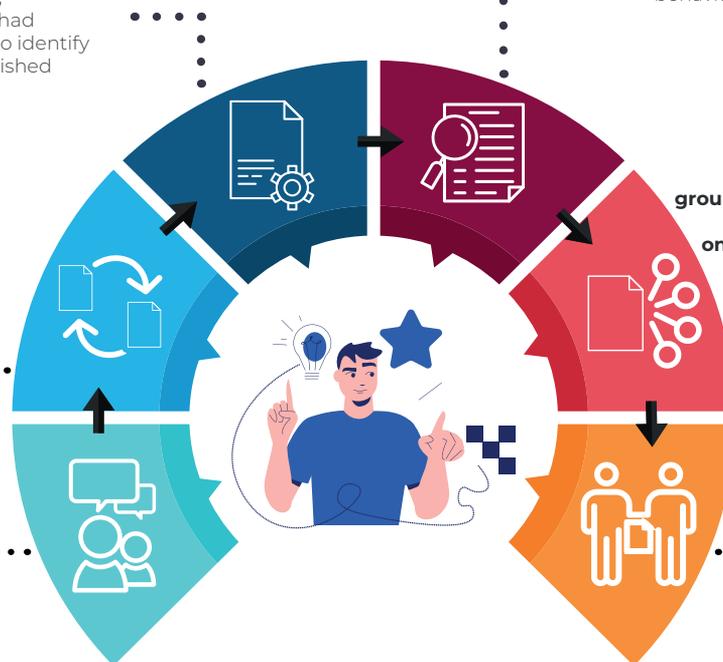
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Behavioral and psychological game theory: a systematic review

Teoría de juegos conductual y psicológica: una revisión sistemática

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Abstract: because of the game theory there is a better understanding of human behavior in the economy. However, since this theory excludes the psychological aspect from conduct, a revision of the rationality assumption completes the missed information in some games. As a consequence, some approaches have emerged including behavioral and psychological aspects in games, generating a large amount of literature distributed in apparently independent lines of research, a fact that could cause confusion. To clarify whether behavioral game theory and psychological game theory are independent approaches, a systematic review was conducted using the PRISMA guidelines to identify all empirical studies published under both names. Papers that (1) had psychological variables, (2) were peer-reviewed, and (3) had any experimental design were collected. From 492 papers searched, 67 were included in this systematic review. They were organized and studied to determine what type of psychological variables they included and whether there are really two different approaches. The most common term used is behavioral game theory in which variables like guilt, trust, motivation, and reciprocity are widely used. The main conclusion is that the two approaches are really the same and it is the followers of the main authors of each current who publish under one or the other name.

Keywords: behavioral game theory, psychological game theory, behavioral economics, game theory, decision making, decision theory, social behavior, cognitive hierarchy.

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Resumen: gracias a la teoría de los juegos tenemos una mejor comprensión del comportamiento humano en la economía. Sin embargo, como esta teoría excluye el aspecto psicológico de la conducta, una revisión del supuesto de racionalidad completa la información perdida en algunos juegos. Como consecuencia, han surgido algunos enfoques que incluyen aspectos conductuales y psicológicos en los juegos. Esto ha generado una gran cantidad de literatura distribuida en líneas de investigación aparentemente independientes, hecho que puede generar confusión. Para aclarar si la teoría de juegos conductual y psicológica son enfoques independientes, se realizó una revisión sistemática utilizando las directrices PRISMA para identificar todos los estudios empíricos publicados bajo ambas denominaciones. Se recogieron trabajos que (1) tuvieran variables psicológicas, (2) estuvieran revisados por pares y (3) tuvieran algún diseño experimental. De los 492 trabajos buscados, 67 se incluyeron en esta revisión sistemática. Se organizaron y estudiaron para determinar qué tipo de variables psicológicas incluían y si realmente existen dos enfoques diferentes o no. El término más utilizado es la teoría del juego conductual, en la que se utilizan ampliamente variables como la culpa, la confianza, la motivación y la reciprocidad. La principal conclusión es que los dos enfoques son realmente el mismo y son los seguidores de los principales autores de cada corriente los que publican bajo uno u otro nombre.

Palabras clave: teoría de juegos conductual, teoría de juegos psicológica, economía conductual, teoría de juegos, toma de decisiones, teoría de la decisión, comportamiento social, jerarquía cognitiva.

Introduction

Game theory is the process of decision making in uncertain situations and arises in economic thought. It was introduced by von Neumann and Morgenstern (1930) under the name Game Theory and Economic Behavior. Game theory was based on the assumption that rational individuals create strategies to maximize their own welfare, while considering the accurate beliefs of others' decisions. Likewise, behavioral game theory goes beyond classical game theory to explain bounded rationality problems (Camerer and Ho, 2015) and expectations about players' behavior, fundamental variables in the field of economy (Mejía *et al.*, 2019) and even in the formation of culture (Geizzelez-Luzardo and Soto-Gómez, 2021). Some examples of games could be the prisoner's dilemma or the ultimatum game. The prisoner's dilemma game (Poundstone, 1992) involves two prisoners who have to choose separately to testify against each other or to remain silent. If one betrays the other, both serve two years in prison. If both remain silent, they serve only one year in prison. If one of them betrays the other and the other remains silent, the former will be released, but the latter will serve three years in prison. The ultimatum game (Güth *et al.*, 1982) is an experimental economics game in which two parties interact with each other anonymously only once so that reciprocity is not an issue. The first player advocates splitting a sum of money with the other player. However, if the second player rejects this division, neither player receives anything. These games, as well as many others, demonstrate the importance of variables such as trust, fairness, or collaboration beyond the goal of maximizing utility. For example, in the prisoner's dilemma it is common that players make a decision that harms them in the face of distrust.

Although different terms have been used to refer to the introduction of psychological variables in games, behavioral game theory and psychological game theory may be the most complete, integrative and commonly accepted. In fact, as will be presented in the conclusions, both terms refer to the same phenomenon. The term behavioral game theory is more commonly used by authors from the field of behavioral economics and the term psychological game theory by authors from the field of economic psychology.

Therefore, this is a systematic review that synthesizes most of the published studies on behavioral game theory and psychological game theory. The PRISMA 2009 guidelines (Liberati *et al.*, 2009) are used to delve into the papers that use these novel variables. The papers have been divided into two classifications: one that is based on the review on behavioral games by Camerer and Ho (2015), and another based on labels that could adequately describe the psychological variables that influence decision making in each paper. These labels are considered the focus of each research, which parallel to Camerer and Ho's (2015) classification, facilitate the reader's understanding in terms of behavioral game theory. In addition, the characteristics of

the experimental design, including sample size, experimental sessions, or whether the investigations were fully empirical or had a theoretical model accompanied by an empirical test, have been collected.

Based on the above, the following research question can be formulated: what psychological variables have been included in the framework of behavioral game theory and psychological game theory? To answer this question, the systematic review is presented below, first introducing the historical background of how behavioral game theory could have emerged from an information problem in classical game theory. PRISMA 2009 method is explained for the systemic review and an in-depth analysis of the results is conducted, according to the aforementioned classifications and other empirical features.

The theoretical assumption of rationality in games arises from the player's knowledge of all the alternatives in the game, his/her evaluation and his/her choice of the most efficient decision for the situation. Based on this information, the player creates strategies, beliefs, and establishes trade-offs about what he or she values most. Games rarely provide complete or accurate information; therefore, not only will some errors occur, but assumptions about rationality may also begin to fail (Simon, 1990).

The first author to refer to asymmetric information was Harsanyi (1967), who created a new model of games in which players must consider probabilities in their strategies because they ignore the actions of others. This point of non-information has more relevance when classical games are the subject of experiments, as in the work of Mäs and Nax (2016), in which coordination games present uncertain noise related to human behavior. A non-experimental example studied by Radner (1980), showed how in a Cournot-type model, agents play responses close to the best strategies of others, rather than playing accurate and best responses. Furthermore, McFadden (1976) have shown how errors in beliefs and strategies can occur, making this inaccuracy much more significant. Modeling these errors as probabilities in players' own and others' actions was first stated by McKelvey and Palfrey

(1995), who proposed a quantal response model that describes errors´ distribution as a density function (usually a logit function), leading to an important number of publications that focused on errors in driving strategies. Recently, several authors have made revisions and variations (Benndorf *et al.*, 2017; Goeree and Holt, 2004; Weizsäcker, 2003).

However, why do these errors occur? This is what game theory tries to answer because lack of information causes changes in behavior. Selten (1978) and Kreps and Wilson (1982) observed through experiments some inconsistencies between game-theoretic reasoning and human behavior, and found that each agent had different interpretation levels of the game and of information from other agents. Some levels considered strategies closer to game-theoretic play, i.e., levels at which the agent approached rationality. In contrast, an experimental study of the centipede game by McKelvey and Palfrey (1995) observed how the subjective interpretation of other agents' altruistic behavior influenced the strategy implemented, called by Simon as bounded (1990). If agents are not fully rational in gathering the correct information, they tend not to play a strategy that maximizes their theoretical utility. This line of thought led to the introduction of a new branch of research.

This bounded rationality approach was established and generalized by Camerer *et al.* (2004) in a cognitive hierarchy model, which is a mental model based on the understanding levels of the game that each player has about the other. For example, level 0 players assume that all players are level 0 and design their strategies accordingly, but level 1 players, who understand the game better, know which players are level 0 or level 1 and play accordingly. These tiered mental models attempt to explain a player's guesses about the decisions and beliefs of others, according to his or her own knowledge of the game. When these decisions and beliefs come from higher cognitive ability and character skills, better strategic positions are more frequent (Cunha *et al.*, 2010; Lindqvist and Vestman, 2011), because if there is more intelligence, there is also more ability to take information from the game and from other

agents. Similarly, the more emotional intelligence, the more rational clarity there will be (Gill and Prowse, 2016; Heckman and Kautz, 2012). Moreover, as cognitive skills can lead to strategic advantages, this strategic intelligence can anticipate competitors' behavior (Levine *et al.*, 2017) with less impulsivity (Cueva *et al.*, 2016). Also, this game theory literature included research on archetypal personality games as in the Proto *et al.* (2019) experiment using games with individuals who have not yet fully developed their personality, such as adolescents and children (Sutter *et al.*, 2019), or games with individuals who have high psychoticism (Martin, 2017).

However, the fact that players have bounded rationality does not mean that they cannot predict the future behavior of other agents in dynamic games. Even if predictions are not accurate due to the presence of non-rational agents, they can approximate a rational equilibrium. The adjustments that players do regarding their prediction of others' strategies in games are called learning. Learning in games is well described in classical game theory, where agents reinforce the way they take in game information as the game unfolds (for a discussion, see Nachbar, 2020). However, because people have different cognitive abilities that produce some errors in strategy formation, learning, as a cognitive feature, also contains some errors (Eyster, 2019). Considering that quantal response models treat errors in strategy formation as a density function as the game elapses, these errors are modeled as probability distributions at each instant of time, hence, it is a stochastic model (e.g., Bravo and Mertikopoulos, 2017). Errors influence the prediction of other players' moves. This prediction plus the tendency to choose fruitful strategies from the past is what Camerer and Ho (1999) called experience-weighted attraction (EWA). EWA focuses on the predisposition of players to follow some strategies, expressed through a probability of choosing them again. When these probabilities depend on learning from others, it is called sophistication. Sophistication comes from the union between learning models and cognitive models. This is what Camerer *et al.* (2002) implemented with the k-level and EWA models as a way to explain sophistication and later refined with autotuning (Ho *et al.*, 2007). In addition to

expertise, cognitive ability also influences the attractiveness of some strategies (Fehr and Huck, 2016; Gill and Prowse, 2016) and, of course, strategic sophistication (Penczynski, 2016).

Considering the evidence from reports in behavioral game theory, there is a better understanding of human behavior in games that can be useful in economic and commercial settings. Because classical game theory excludes the psychological aspect of behavior, these new approaches to the rationality assumption fill in the missing information in some games, making more accurate predictions about human behavior. For all these reasons, it is interesting to review the psychological variables analyzed from behavioral game theory and psychological game theory.

Criteria for selecting the corpus

A systematic search was conducted to identify publications categorized within behavioral game theory and psychological game theory that incorporated empirical research in decision making. The study followed the recommended reporting elements for systematic reviews and meta-analyses (PRISMA 2009) guidelines (Liberati *et al.*, 2009) in the systematic search. The databases included in the search were EBSCO (EBS), ScienceDirect (SD), Scopus (SC), Web of Science (WOS), and ProQuest-ABI/INFORM (PRO). The first four databases were selected in a multidisciplinary way to ensure that articles from both the economic and psychological fields were found. However, this study is framed within the study of behavioral economics, so the last database was selected to guarantee the presence of all relevant articles in this field. EBS is a multidisciplinary database, one of the main resources of specialized bibliographic information (Funes Neira, 2015). SD was launched in 1999 as a web-based database of Elsevier's periodicals and has grown to become the world's leading provider of scientific information (Alvite and Rodriguez, 2004). SC is a multidisciplinary bibliographic database of abstracts and citations of scientific journal articles; it is provided by Elsevier and is updated daily. WOS is a multidisciplinary bibliographic database whose indexes are formed by mainstream

publications, being one of the main research tools in the academic world. PRO is a Business and Management database; its provider is ProQuest (Funes Neira, 2015).

The search was conducted using *behavioral game theory* and *psychological game theory* as keywords, using Boolean OR to search on title, abstract and keywords. In addition, the search was limited to peer-reviewed articles written in English. Once the initial results of the search queries were inspected, the references of the included studies were also examined and incorporated into the review if they met the inclusion criteria. After the initial search and reference review were completed, manual searches were performed for each of the journals identified in the search using the same keywords. This was done to determine whether studies not included in the databases were suitable for inclusion in the review. After several discussions regarding inclusion criteria, disagreements were resolved according to PRISMA 2009 guidelines. The initial search was performed on September 20, 2020, and the results for articles included in the EBS, SD, SC, WOS, and PRO databases were: 31, 60, 155, 70, and 135, respectively. Full-text versions of all selected studies were retrieved and analyzed by the first author to determine whether they met the inclusion criteria. In addition, the full search procedures were repeated by the second and third authors to ensure that the search results were reliably and objectively obtained and reviewed.

From all these articles, were selected those that (1) included a methodology showing the effect of any psychological variable on decision making, (2) were written in English, and (3) were published in a peer-reviewed journal. This resulted in 67 studies included in the systematic review. A schematic view of the article selection process is presented in Figure 1.

In the end, 67 articles met all inclusion criteria. The initial search yielded a large number of publications (n=492) of which 57.7 % were excluded because they were duplicated in the set or otherwise unacceptable. Also, 69.23 % (n=144) of the resulting 208 papers were excluded because they did not include psychological variables in the games. Partially experimental results were those that had a theoretical background constructed by the authors, while some used theories from other authors. Because the earlier papers had experiments to support the theory, we included them along with the fully experimental ones. Partial experimental papers accounted for 37.31 % of the total papers, and fully experimental papers accounted for 62. 69%.

One of the most interesting aspects of using the PRISMA 2009 methodology is the control of bias. It is necessary to assess the risk of bias at the study or outcome level. The degree to which a review can yield reliable conclusions about the effects of an intervention depends on the validity of the data and the results of the studies included in the review. Thus, for example, a meta-analysis of studies with low internal validity will produce erroneous results. Therefore, assessment of the validity of the included studies is an essential component of a review and should be considered in the analyses, interpretation, and conclusions of the review. Because this study is limited to a theoretical review and does not proceed to a meta-analytic study, control of bias is limited to ensuring that there are no missing studies. To control this bias, the second and third authors repeated the entire search, which was useful, because after the second and third author's review, we went from selecting 451 to selecting 495, i.e., 44 more articles were included. This is because the first inclusion criterion, which was to include a methodology that showed the effect of some psychological variable on decision making, was not clear in the studies that built a theoretical model that was then contrasted by supporting experiments.

Figure 1
Process for selecting the articles
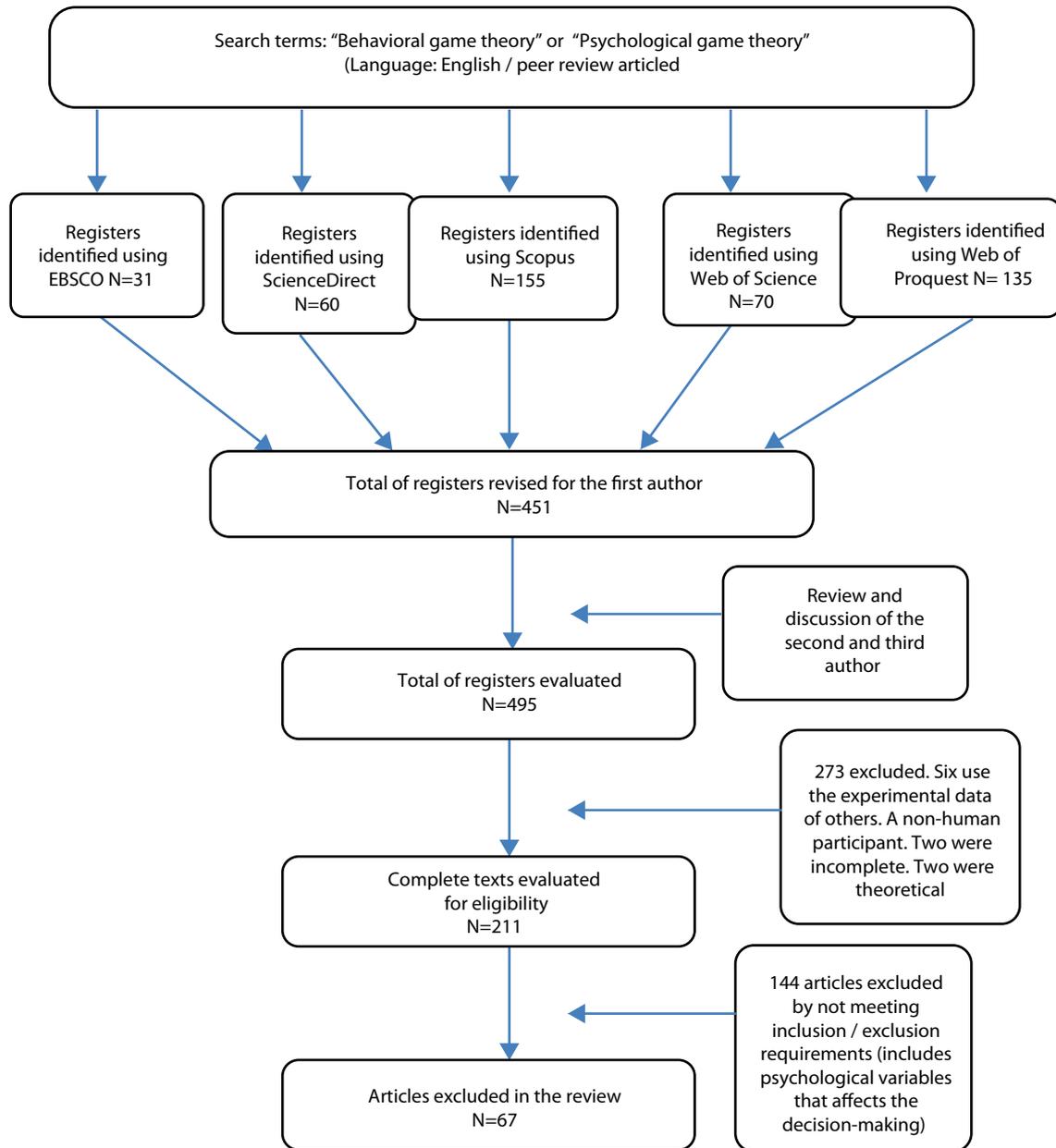
State of the art

If reviewing the state of the art, we can group the different articles analyzed considering different criteria. If observing the methodological criteria, it can be observed that out of the 67 papers that were finally selected for the analysis, the only one that did not clearly present the total sample size was McCabe *et al.* (2003). However, it was observed that the samples used varied greatly among the articles, as shown in Table 1.

Table 1

Design of the papers

Article	Experimental	Size of the sample	Sesions	Citations
Regner (2014)	Partially	31 120	-	6
Kearns *et al.* (2009)	Completely	2916	81	78
Sah and Read (2020)	Completely	2733	-	0
Johnson and Rips (2015)	Completely	1521	-	12
Franzen and Pointner (2013)	Completely	509	-	73
Macro and Weesie (2016)	Partially	453	22	3
Charness and Dufwenberg (2006)	Partially	450	15	807
Cardella (2016)	Partially	444	22	3
Ho and Weigelt (2005)	Partially	386	13	34
Bracht and Regner (2013)	Completely	384	12	18
Fugger *et al.* (2016)	Partially	372	-	22
Attanasi *et al.* (2019)	Partially	369	19	4
Sacconi *et al.* (2011)	Completamente	366	10	0
Wu (2018)	Partially	363	12	1
Póvoa *et al.* (2020)	Completely	336	12	0
Halevy and Phillips (2015)	Completely	320	40	43
Song (2009)	Completely	312	-	38
Berger *et al.* (2016)	Partially	305	4	3
Ackermann *et al.* (2016)	Completely	296	-	29
Giaccherini and Ponti (2018)	Completely	288	12	1
Bellemare *et al.* (2018)	Completely	284	12	11
Peeters and Vorsatz (2018)	Partially	278	-	0
Chen and Houser (2019)	Partially	273	17	1
Mäs and Nax (2016)	Completely	260	13	36
Laing and Morrison (1974)	Partially	256	41	18
Dufwenberg *et al.* (2011)	Partially	255	15	190
Tarrant *et al.* (2008)	Completely	243	-	0
Morell (2019)	Completely	240	15	0
Moinas and Pouget (2013)	Partially	234	12	28
Lindsay (2019)	Partially	208	10	1
He and Wu (2020)	Completamente	208	9	2
Rauhut (2015)	Partially	200	10	2
Bernasconi and Galizzi (2010)	Completely	192	17	2

Article	Experimental	Size of the sample	Sesions	Citations
McCubbins and Turner (2014)	Completely	190	-	1
Jin (2020)	Partially	184	6	2
Woon (2018)	Partially	182	13	1
Mohlin *et al.* (2020)	Partially	179	6	0
Diekmann (2004)	Completely	174	-	95
Engelbrecht-Wiggans *et al.* (2007)	Completely	160	40	82
Maqbool *et al.* (2017)	Completely	156	3	5
Yang and Liu (2019)	Completely	150	20	0
Haruvy and Katok (2013)	Completely	128	-	50
Scharlemann *et al.* (2001)	Completely	120	-	265
Brocas *et al.* (2014)	Completely	118	8	3
Georganas *et al.* (2015)	Completely	116	10	43
Song (2008)	Completely	108	4	34
Roberts and Goldstone (2011)	Completely	106	18	16
Halevy and Phillips (2015)	Completely	101	-	8
Zeitzoff (2014)	Completely	100	4	27
Kausel (2017)	Completely	98	49	3
Gneezy *et al.* (2010)	Completely	88	14	36
Kostelic (2020)	Completely	87	-	1
Leland and Schneider (2015)	Partially	78	4	1
Devetag and Warglien (2003)	Completely	67	1	41
Benndorf *et al.* (2017)	Partially	66	11	4
Collard and Oboeuf (2013)	Partially	66	65	2
Napoli and Fum (2010)	Completely	64	6	0
Camerer and Ho (1999)	Partially	54	6	854
Srivastava *et al.* (2000)	Completely	46	-	0
Gibbons and Boven (2001)	Completely	44	13	8
Adriaanse (2011)	Completely	42	-	2
Huoviala and Rantala (2013)	Completely	40	1	24
Hillebrandt *et al.* (2011)	Completely	24	-	26
Kang y Camerer (2018)	Partially	23	-	1
Johnson *et al.* (2002)	Partially	20	2	212
Martin *et al.* (2014)	Completely	4	4	7
McCabe *et al.* (2003)	Completely	-	-	301

The mean and standard deviation of the sample were calculated; the mean of the sample sizes of the 63 items was 802.49 individuals and the standard deviation was 3825.93 individuals. The extremely high deviation suggested that the data are very heterogeneous. We observed five outliers that could bias these two measures as indicators of the whole sample. The maximum number of observations used was 31 120 from Regner (2014) and the second highest was 2916 observations from Kearns *et al.* (2009). These two experiments recorded online responses, which allowed such large samples. The third and fourth outliers had 2733 and 1521 observations, respectively, and corresponded to Sah and Read (2020) and Johnson and Rips (2015). The reason they had relatively large samples was that both consisted of a set of posterior experiments. Conversely, the fifth outlier was presented by Martin *et al.* (2014), which was an experiment with four chimpanzees using games. If removing those five outliers in the calculations, the mean becomes 180.4 individuals and the standard deviation is 128.54, being more representative figures. The maximum and minimum are now 509 and 20 observations from Franzen and Pointner (2013) and Johnson *et al.* (2002). Another feature of the samples is that 90 % of the experiments used college students as study participants. A couple of papers used only one gender in their research: only males to study testosterone in games (Huoviala and Rantala, 2013) or only females (Hillebrandt *et al.*, 2011) to test theoretical hypotheses, leaving gender constant. Other studies used chimpanzees (Martin *et al.*, 2014) elite athletes (Collard and Oboeuf, 2013), Google users (Regner, 2014), hospital patients (Tarrant *et al.*, 2008), war victims (Zeitzoff, 2014), Amazon workers (Johnson and Rips, 2015), and residents of a neighborhood (Adriaanse, 2011). Furthermore, participants' reward was clearly specified in 82.08 % of the items; we were unable to determine whether participants in the other 17.91 % of the items received any reward. In most of the experiments in which participants received a reward, the reward was a monetary incentive. The remaining experiments rewarded their participants through academic incentives, such as course credit (Roberts and Goldstone, 2011; Yang and Liu, 2019), or an increase in a subject grade (Kostelic, 2020).

If considering the sessions carried out, it is found that 71.64% clearly specified the number of experimental sessions, while the other 28.35% did not provide such information. There could be many reasons for this. On average, 16.68 ($\pm$17.1) experimental sessions were performed among the papers that clearly indicated the number of sessions.

The selected papers were analyzed taking into account how they are organized according to the broad classification made by Camerer and Ho (2015), and assigning each study to a game typology. The game types were cognitive hierarchy (level-k models are also similar), quant response, learning, sophistication, and social preference models. Although the sophistication models are an extension of the learning models, we merged them into our classification scheme.

In conducting the search, we learned that each publication selected was an experimental study looking at psychological variables to determine how individuals make decisions by observing the actions of others. Considering the role of social behavior in these games, it is reasonable that the results of most of the papers were models of social preference. Specifically, we determined that 50.74% of the papers used social preference models. These papers studied how the social behavior of others affects our own behavior. For example, Scharlemann *et al.* (2001) tested how a smile can change players' strategy, and Bellemare *et al.* (2018) measured guilt sensitivity in dictator games. The second most frequent type of models used were learning or sophistication models (25.37 % of all papers), which were used when the authors wanted to study the decision-making process in social behavior (Gneezy *et al.*, 2010; Ho and Weigelt, 2005), for this reason some of them were mixed with a social preference model, as in Bernasconi and Galizzi (2010) and Martin (2017). 14.92 % used cognitive hierarchy or k-level models due to the study of the initial conditions of a game through rationality, such as Berger *et al.* (2016) and Dufwenberg *et al.* (2011). In addition, they used cognitive hierarchy models due to the examination of how individuals interpret information, as in Jin (2020) and Kostelic (2020). Finally, 8.95 % used quantal response models due to non-precise equilibria and actions, as in Brocas

et al. (2014), where weighted imperfect attention was studied as a way of looking at weighted imperfect strategies. In addition, imperfect market equilibria as a result of weighted strategies are observed in Lindsay (2019) and Fugger *et al.* (2016).

It is important to point out that this classification was made by first considering the classification given by the authors to their article; secondly, in the cases in which the research did not fit into any of the categories, the model that most closely resembles it was used. Therefore, this classification does not imply that the articles do not contemplate other less relevant variables from a different Camerer model. In fact, we found at least four articles that assigned them to different categories. Brocas *et al.* (2014) and Moinas and Pouget (2013) are cognitive hierarchy and quantal response models because bounded rationality causes players to make small errors. In addition, Lindsay (2019) presents a quantum learning and response model and Georganas *et al.* (2015) proposes a cognitive learning and hierarchy model, i.e., a sophistication model.

Contributions to the state of the art

Considering the above and the methodology used in the systematic review, the main contribution of this study would be to group the different papers around the main hypotheses raised in them, understanding that it can help future researchers.

Social preferences

According to Camerer (2010), social preference models convert monetary rewards into utilities and behaviors. Sociability can change players' strategies into more acceptable actions, a topic that worth studying. It can be observed in Table 2 that most of the articles focus their efforts on studying guilt and reciprocity as generators of non-rational equilibria. Articles labeled as "studying guilt" examine the role of guilt (Bracht and Regner, 2013; Giaccherini and Ponti, 2018), guilt aversion (Attanasi *et al.*, 2019; Bellemare *et al.*, 2018; Charness and Dufwenberg, 2006), and how guilt is used to manipulate the actions of others (Cardella, 2016). Articles on reciprocity investigate how reciprocity shapes behavior, such as Diekmann (2004) and Franzen and Pointner (2013), but also when reciprocity is not as important, such as Chen and Houser (2019). The third most frequent theme, which could be an extension of reciprocity, is the study of trust: examining whether trust is built through reciprocity (Song, 2008); how social inclusion influences behavior and trust (Hillebrandt *et al.*, 2011); and how individuals trust each other across cultures (Póvoa *et al.*, 2020; Zeitzoff, 2014). Reciprocity, trust, and blame can be used to study the behavior of social groups (Yang and Liu, 2019) and how these social groups trust each other by looking at how they share public goods (Adriaanse, 2011) and also to look at their behavior in negotiations and conflicts in a group (Halevy and Phillips, 2015). Additionally, there is another subcategory: biopsychology, which is the study of how physiological changes influence behavior, whether by testosterone (Huoviala and Rantala, 2013) or by a smile (Scharlemann *et al.*, 2001).

Table 2
Social preferences

Article	Experimental	Label
Gibbons and Boven (2001)	Completely	Decision making
Scharlemann *et al.* (2001)	Completely	Biopsychology
Diekmann (2004)	Completely	Reciprocity
Charness and Dufwenberg (2006)	Parcialmente	Guilt
Song (2008)	Completely	Trust

Article	Experimental	Label
Halevy and Phillips (2015)	Completely	Management and conflict
Kearns *et al.* (2009)	Completely	Network
Song (2009)	Completely	Trust
Adriaanse (2011)	Completely	Common good
Napoli and Fum (2010)	Completely	Reciprocity
Hillebrandt *et al.* (2011)	Completely	Trust
Bracht and Regner (2013)	Completely	Guilt
Sacconi *et al.* (2011)	Completely	Reciprocity
Franzen and Pointner (2013)	Parcialmente	Reciprocity
Huoviala and Rantala (2013)	Completely	Biopsychology
Regner (2014)	Parcialmente	Reciprocity
Ackermann *et al.* (2016)	Completely	Reciprocity
Zeitzoff (2014)	Completely	Reciprocity
Cardella (2016)	Parcialmente	Guilt
Halevy and Phillips (2015)	Completely	Management and conflict
Mäs and Nax (2016)	Completely	Networks
Macro and Weesie (2016)	Parcialmente	Unequality
Kausel (2017)	Completely	Emotions
Bellemare *et al.* (2018)	Completely	Guilt
Woon (2018)	Parcialmente	Management and conflict
Giaccherini and Ponti (2018)	Completely	Guilt
Peeters and Vorsatz (2018)	Parcialmente	Guilt
Chen and Houser (2019)	Parcialmente	Reciprocity
Attanasi *et al.* (2019)	Parcialmente	Guilt
Morell (2019)	Completely	Guilt
Yang and Liu (2019)	Completely	Social groups
Póvoa *et al.* (2020)	Completely	Trust

Cognitive hierarchy

Cognitive hierarchy focuses more on how initial conditions can influence a game, i.e., belief inconsistencies. As can be seen in Table 3, these initial conditions can be influenced by the rationality level of individuals (Jin, 2020; Johnson and Rips, 2015) or by the strategic implications of the player's awareness of the existence of a game (Kostelic, 2020). In addition, the role of memory (Devetag and Warglien, 2003) and attention (Brocas *et al.*, 2014) are other points of study in relation to an agent's reference point. Finally, the psychological framework (Dufwenberg *et al.*, 2011) represents an interesting insight in the cognitive situation of players.

Table 3
Cognitive hierachy

Article	Experimental	Label
Johnson *et al.* (2002)	Parcially	Rationality
Devetag and Warglien (2003)	Completely	Memory
Dufwenberg *et al.* (2011)	Parcially	Frame
Brocas *et al.* (2014)	Completely	Atention
Moinas and Pouget (2013)	Parcially	Negociacion
Johnson and Rips (2015)	Completely	Rationality
Georganas *et al.* (2015)	Completely	Rationality
Berger *et al.* (2016)	Parcially	Rationality
Benndorf *et al.* (2017)	Parcially	Rationality
Jin (2020)	Parcially	Rationality
Kostelic (2020)	Completely	Awareness

Quantitative response

Quantitative response models are used when players have accurate beliefs but mistake their actions. Such errors could come from information loss (McCubbins and Turner, 2014) or asymmetric information (Lindsay, 2019). It should be noted that players may have accurate beliefs, but if they are not allowed to observe all possibilities, they will make errors. In fact (Brocas *et al.*, 2014) established a model in which it does not matter how accurate beliefs are if players do not pay enough attention (the attentional framework is built through a cognitive hierarchy model). Information inconsistencies are also reflected in auction studies. These studies investigate the different mechanisms of auctions (Engelbrecht-Wiggans *et al.*, 2007; Fugger *et al.*, 2016) in which individuals know what they want (winning the auction), but players can make mistakes if the information is not complete (Haruvy and Katok, 2013).

Table 4
Quantitative response

Article	Experimental	Label
Haruvy and Katok (2013)	Completely	Auctions
McCubbins and Turner (2014)	Completely	Loss of information
Moinas and Pouget (2013)	Partially	Negotiation
Leland and Schneider (2015)	Partially	Loss of information
Sah and Read (2020)	Completely	Loss of information
Lindsay (2019)	Partially	Asymmetrical information
Engelbrecht-Wiggans *et al.* (2007)	Completely	Auctions
Fugger *et al.* (2016)	Partially	Auctions

Learning

Learning models suggest changes in strategy because players are learning as the name implies. Because the reference point is the state of change, these models can be adopted with others. Sometimes, players' learning depends on their rationality, so they will be mixed with cognitive hierarchy models (Georganas *et al.*, 2015). However, when change arises as a result of an asymmetric information situation, it may blend with quantal response models (Lindsay, 2019), which could result in different learning strategies in negotiation environments (Srivastava *et al.*, 2000), leading to some changes in communication between agents (Wu, 2018). However, the problem comes when changes in sociability are observed, for example, how the trust-building process occurs (Ho and Weigelt, 2005), how reciprocity emerges (McCabe *et al.*, 2003), or how social groups coordinate (Roberts and Goldstone, 2011). Also, competition for a certain social status can lead players to improve (Laing and Morrison, 1974) because rewards are important to advance (Maqbool *et al.*, 2017). However, motivation is not the only means of learning. Weighted experience is important in order not to make the same mistakes (Camerer and Ho, 1999) even though past behaviors can be repeated (Collard and Oboeuf, 2013).

Table 5
Learning

Article	Experimental	Label
Laing and Morrison (1974)	Partially	State game
Camerer and Ho (1999)	Partially	Weighted experience
Srivastava *et al.* (2000)	Completely	Negotiation
McCabe *et al.* (2003)	Completely	Reciprocity
Ho and Weigelt (2005)	Partially	Trust
Gneezy *et al.* (2010)	Partially	Planning
Bernasconi and Galizzi (2010)	Completely	Network
Roberts and Goldstone (2011)	Completely	Social groups
Collard and Oboeuf (2013)	Partially	Sports
Martin *et al.* (2014)	Completely	Animal cognition
Tarrant *et al.* (2008)	Completely	Trust
Georganas *et al.* (2015)	Completely	Rationality
Rauhut (2015)	Partially	Motivation
Wu (2018)	Partially	Communication
Kang and Camerer (2018)	Partially	Anxiety
Maqbool *et al.* (2017)	Completely	Motivation
He and Wu (2020)	Completely	Commitment
Lindsay (2019)	Partially	Asymmetrical information
Mohlin *et al.* (2020)	Partially	Likehood weight

Discussion

Some authors show differences between psychological game theory and other behavioral approaches to game theory. According to psychological game theory, one attempts to incorporate the beliefs of others about an individual's actions directly into his or her utility function. According to the authors, "this differs from the known applications of psychology to economics and political science, where biases, heuristics, etc. are used to explain observed behaviors" (DeAngelo and McCannon, 2020, p. 2). Under this theoretical framework, one can describe one's own or others' beliefs, on which preferences in decision making are crucial. This theory would incorporate emotions, reciprocity, image concern and self-esteem into the economic analysis (Battigalli and Dufwenberg, 2020). The above is at odds with the findings of the present review, as BGT also uses beliefs, emotions, reciprocity, and self-esteem as variables in its studies. It also goes against other findings such as those of Goeree and Louis (2021) who demonstrate the virtues of behavioral game theory in predicting stated beliefs.

The difference between the two approaches may be due to the different types of analysis common in economics and psychology rather than to the study of different phenomena or variables. According to Nagatsu and Lisciandra, this "may be explained by the specific way in which economists conduct equilibrium analysis of aggregate-level outcomes in their practice, and by the reluctance of psychologists to engage fully in such practice"(2021, p. 289).

Conclusions

The review shows that some articles refer to 'psychological game theory' while others use the term 'behavioral game theory'. In addition, authors who classified their studies as psychological did not do so as behavioral, being intrinsically related to the bibliographic references and keywords that were used in each specific publication, meaning that the vocabulary used in a specific publication tends to follow the accepted terms that have been first used in the supporting references for that research. In addition, the article that described their work in terms of behavioral (psychological) games used references that also described behavioral (psychological) games but not psychological (behavioral) games. Specifically, one of the main findings of this review is that all behavioral game theory articles cite Camerer (2010), and all psychological game theory articles cite Geanakoplos *et al.* (1989), Battigalli and Dufwenberg (2009), or Balafoutas (2011). This could imply the reason why psychological game theory and behavioral game theory are treated as two different research areas, as one does not normally cite the other. However, there are no differences between them in terms of research focus, which, if found, would have implied a major limitation. If those using psychological (behavioral) games do not use the same terminology as those using behavioral (psychological) games, then some articles could be investigating the same topics or, at the very least, assume that there are new lines of research when in fact they have already been studied under the opposite term. Despite these two ways of assigning games using bounded rationality, the psychological variables involved are similar. For example, studies on guilt, trust, motivation, and reciprocity are widely used to investigate their strategic implications. In addition, variables such as attention span or anxiety proneness mainly affect information loss in games. This loss of information is sometimes the reference point for studying different auction systems, failures in negotiations, communication errors and conflict resolution. Other articles include the examination of intelligence, consciousness, and memory as psychological perspectives on deviations in game theory. These deviations are sometimes unintentional, but respond to a player's cognition. In fact, the study of changes in cognition to approach competitive equilibrium was used as a form of learning in games. For example, players may first apply a strategy that might change based on greater mental clarity as the game unfolds. In summary, three main types of variables can be noted: emotional, social and cognitive. Additionally, we found that there were psychological variables that represented the objectives of the studies given an economic environment or variables that were used as a

psychological environment to explain economic behavior. Through this mix of disciplines, we can better understand human behavior in game theory, in addition to the theoretical framework for measuring how individuals may behave when facing uncertainty.

Although the objective was to analyze the different studies grouped around the two approaches mentioned, behavioral game theory and psychological game theory, a limitation of this paper can be that there are a large number of articles that include psychological or behavioral variables in the experiments conducted with game theory, which do not fall under either of these two approaches. For future research, it would be interesting to include other search criteria such as social game theory.

References

Ackermann, K. A., Fleiß, J. and Murphy, R. O. (2016). Reciprocity as an Individual Difference. *Journal of Conflict Resolution*, *60*(2), 340-367. https://doi.org/10.1177/0022002714541854

Adriaanse, C. (2011). The importance of norms: Behavioural game theory as a tool to understand neighbourhood events. *Housing, Theory and Society*, *28*(1), 39-60. https://doi.org/10.1080/14036091003691019

Alvite, M. L. and Rodríguez, B. (2004). Análisis de la distribución de contenidos electrónicos de ScienceDirect. *El Profesional de La Información.*, *13*(5), 353-360.

Attanasi, G., Rimbaud, C. and Villeval, M. C. (2019). Embezzlement and guilt aversion. *Journal of Economic Behavior & Organization*, *167*, 409-429. https://doi.org/https://doi.org/10.1016/j.jebo.2019.02.002

Balafoutas, L. (2011). Public beliefs and corruption in a repeated psychological game. *Journal of Economic Behavior and Organization*, *78*(1-2), 51-59. https://doi.org/10.1016/j.jebo.2010.12.007

Battigalli, P. and Dufwenberg, M. (2009). Dynamic psychological games. *Journal of Economic Theory*, *144*(1), 1-35. https://doi.org/https://doi.org/10.1016/j.jet.2008.01.004

Battigalli, P. and Dufwenberg, M. (2020). Belief-Dependent Motivations and Psychological Game Theory. *CESifo Working Paper No. 8285.* https://doi.org/http://dx.doi.org/10.2139/ssrn.3598771

Bellemare, C., Sebald, A. and Suetens, S. (2018). Heterogeneous guilt sensitivities and incentive effects. *Experimental Economics*, *21*(2), 316-336. https://doi.org/10.1007/s10683-017-9543-2

Benndorf, V., Kubler, D. and Normann, H. T. (2017). Depth of reasoning and information revelation: An experiment on the distribution of k-levels. *International Game Theory Review, 19*(4). https://doi.org/10.1142/S0219198917500219

Berger, U., de Silva, H. and Fellner-Röhling, G. (2016). Cognitive hierarchies in the minimizer game. *Journal of Economic Behavior & Organization*, *130*, 337-348. https://doi.org/https://doi.org/10.1016/j.jebo.2016.08.004

Bernasconi, M. and Galizzi, M. (2010). Network formation in repeated interactions: Experimental evidence on dynamic behaviour. *Mind and Society*, *9*(2), 193-228. https://doi.org/10.1007/s11299-010-0078-x

Bracht, J. and Regner, T. (2013). Moral emotions and partnership. *Journal of Economic Psychology*, *39*, 313-326. https://doi.org/10.1016/j.joep.2013.09.007

Bravo, M. and Mertikopoulos, P. (2017). On the robustness of learning in games with stochastically perturbed payoff observations. *Games and Economic Behavior*, *103*, 41–66. https://doi.org/10.1016/j.geb.2016.06.004

Brocas, I., Carrillo, J. D., Wang, S. W. and Camerer, C. F. (2014). Imperfect choice or imperfect attention? Understanding strategic thinking in private information games. *The Review of Economic Studies*, *81*(3), 944–970. https://doi.org/10.1093/restud/rdu001

Camerer, C. (2010). behavioural game theory. In *Behavioural and Experimental Economics* (pp. 42-50). Palgrave Macmillan UK. https://doi.org/10.1057/9780230280786_6

Camerer, C. and Ho, T. (1999). Experience-weighted attraction learning in normal form games. *Econometrica*, *67*(4), 827-874. https://doi.org/10.1111/1468-0262.00054

Camerer, C. y Ho, T. (2015). Behavioral game theory experiments and modeling. In *Handbook of Game Theory with Economic Applications* (Vol. 4, pp. 517-573). Elsevier B.V. https://doi.org/10.1016/B978-0-444-53766-9.00010-0

Camerer, C., Ho, T. and Chong, J. K. (2002). Sophisticated experience-weighted attraction learning and strategic teaching in repeated games. *Journal of Economic Theory*, *104*(1), 137-188. https://doi.org/10.1006/jeth.2002.2927

Camerer, C., Ho, T. and Chong, J. K. (2004). A cognitive hierarchy model of games. *The Quarterly*

Journal of Economics, *119*(3), 861-898. https://doi.org/10.1162/0033553041502225

Cardella, E. (2016). Exploiting the guilt aversion of others: do agents do it and is it effective? *Theory and Decision*, *80*(4), 523-560. https://doi.org/10.1007/s11238-015-9513-0

Charness, G. and Dufwenberg, M. (2006). Promises and partnership. *Econometrica*, *74*(6), 1579-1601. https://doi.org/10.1111/j.1468-0262.2006.00719.x

Chen, J. and Houser, D. (2019). Broken promises and hidden partnerships: An experiment. *Journal of Economic Behavior & Organization*, *157*, 754-774. https://doi.org/https://doi.org/10.1016/j.jebo.2018.11.007

Collard, L. and Oboeuf, A. (2013). Do dangerous sports specialists play more dangerously? An experimental study on sample selection. *Journal of Risk Research*, *16*(1), 39-50. https://doi.org/10.1080/13669877.2012.725671

Cueva, C., Iturbe-Ormaetxe, I., Mata-Pérez, E., Ponti, G., Sartarelli, M., Yu, H. and Zhukova, V. (2016). Cognitive (ir)reflection: New experimental evidence. *Journal of Behavioral and Experimental Economics*, *64*, 81-93. https://doi.org/10.1016/j.socec.2015.09.002

Cunha, F., Heckman, J. J. and Schennach, S. M. (2010). Estimating the technology of cognitive and noncognitive skill formation. *Econometrica*, *78*(3), 883-931. https://doi.org/10.3982/ecta6551

DeAngelo, G. and McCannon, B. C. (2020). Psychological game theory in public choice. *Public Choice*, *182*(1-2), 159-180. https://doi.org/10.1007/s11127-019-00676-6

Devetag, G. and Warglien, M. (2003). Games and phone numbers: Do short-term memory bounds affect strategic behavior? *Journal of Economic Psychology*, *24*(2), 189-202. https://doi.org/https://doi.org/10.1016/S0167-4870(02)00202-7

Diekmann, A. (2004). The power of reciprocity. *Journal of Conflict Resolution*, *48*(4), 487-505. https://doi.org/10.1177/0022002704265948

Dufwenberg, M., Gächter, S. and Hennig-Schmidt, H. (2011). The framing of games and the psychology of play. *Games and Economic Behavior*, *73*(2), 459-478. https://doi.org/https://doi.org/10.1016/j.geb.2011.02.003

Engelbrecht-Wiggans, R., Haruvy, E. and Katok, E. (2007). A comparison of buyer-determined and price-based multiattribute mechanisms. *Marketing Science*, *26*(5), 629-641. https://doi.org/10.1287/mksc.1070.0281

Eyster, E. (2019). *Errors in strategic reasoning*. North-Holland. https://doi.org/10.1016/bs.hesbe.2018.11.003

Fehr, D. and Huck, S. (2016). Who knows it is a game? On strategic awareness and cognitive ability. *Experimental Economics*, *19*(4), 713-726. https://doi.org/10.1007/s10683-015-9461-0

Franzen, A. and Pointner, S. (2013). The external validity of giving in the dictator game: A field experiment using the misdirected letter technique. *Experimental Economics*, *16*(2), 155-169. https://doi.org/10.1007/s10683-012-9337-5

Fugger, N., Katok, E. and Wambach, A. (2016). Collusion in dynamic buyer-determined reverse auctions. *Management Science*, *62*(2), 518-533. https://doi.org/10.1287/mnsc.2014.2142

Geanakoplos, J., Pearce, D. and Stacchetti, E. (1989). Psychological games and sequential rationality. *Games and Economic Behavior*, *1*(1), 60-79. https://doi.org/10.1016/0899-8256(89)90005-5

Geizzelez-Luzardo, M. and Soto-Gómez, G. (2021). Creatividad, colaboración y confianza: aptitud para la cultura innovativa en las redes de investigación estudiantil. *IPSA Scientia, Revista Científica Multidisciplinaria*, *6*(3), 33-43. https://doi.org/10.25214/27114406.1182

Georganas, S., Healy, P. J. and Weber, R. A. (2015). On the persistence of strategic sophistication. *Journal of Economic Theory*, *159*, 369-400. https://doi.org/https://doi.org/10.1016/j.jet.2015.07.012

Giaccherini, M. and Ponti, G. (2018). Preference based subjective beliefs. *Games*, *9*(3), 50. https://doi.org/10.3390/g9030050

Gibbons, R. and Boven, L. van (2001). Contingent social utility in the prisoners' dilemma. *Journal of Economic Behavior and Organization*, *45*(1), 1-17. https://doi.org/10.1016/S0167-2681(00)00170-0

Gill, D. and Prowse, V. (2016). Cognitive ability, character skills, and learning to play equilibrium: A level-k analysis. *Journal of Political Economy*, *124*(6), 1619-1676. https://doi.org/10.1086/688849

Gneezy, U., Rustichini, A. and Vostroknutov, A. (2010). Experience and insight in the race game. *Journal of Economic Behavior & Organization*, *75*(2), 144-155. https://doi.org/https://doi.org/10.1016/j.jebo.2010.04.005

Goeree, J. K. and Holt, C. A. (2004). A model of noisy introspection. *Games and Economic Behavior*, *46*(2), 365-382. https://doi.org/10.1016/S0899-8256(03)00145-3

Goeree, J. K. and Louis, P. (2021). M Equilibrium: a theory of beliefs and choices in games. *American Economic Review*, *111*(12). https://doi.org/10.9767/BCREC.17.1.12366.32-45

Güth, W., Schmittberger, R. and Schwarze, B. (1982). An experimental analysis of ultimatum

bargaining. *Journal of Economic Behavior & Organization*, *3*(4), 367-388. https://doi.org/10.1016/0167-2681(82)90011-7

Halevy, N. and Phillips, L. T. (2015). Conflict templates in negotiations, disputes, joint decisions, and tournaments. *Social Psychological and Personality Science*, *6*(1), 13-22. https://doi.org/10.1177/1948550614542347

Harsanyi, J. C. (1967). Games with incomplete information played by "Bayesian" players, I–III Part I. The basic model. *Management Science*, *14*(3), 159-182. https://doi.org/10.1287/mnsc.14.3.159

Haruvy, E. and Katok, E. (2013). Increasing revenue by decreasing information in procurement auctions. *Production and Operations Management*, *22*(1), 19-35. https://doi.org/10.1111/j.1937-5956.2012.01356.x

He, S. and Wu, J. (2020). Compromise and coordination: An experimental study. *Games and Economic Behavior*, *119*, 216-233. https://doi.org/https://doi.org/10.1016/j.geb.2019.11.003

Heckman, J. J. and Kautz, T. (2012). Hard evidence on soft skills. *Labour Economics*, *19*(4), 451-464. https://doi.org/10.1016/j.labeco.2012.05.014

Hillebrandt, H., Sebastian, C. and Blakemore, S. J. (2011). Experimentally induced social inclusion influences behavior on trust games. *Cognitive Neuroscience*, *2*(1), 27-33. https://doi.org/10.1080/17588928.2010.515020

Ho, T., Camerer, C. and Chong, J. K. (2007). Self-tuning experience weighted attraction learning in games. *Journal of Economic Theory*, *133*(1), 177-198. https://doi.org/10.1016/j.jet.2005.12.008

Ho, T. and Weigelt, K. (2005). Trust building among strangers. *Management Science*, *51*(4), 519-530. https://doi.org/10.1287/mnsc.1040.0350

Huoviala, P. and Rantala, M. J. (2013). A Putative Human Pheromone, Androstadienone, Increases Cooperation between Men. *PLoS ONE*, *8*(5), e62499. https://doi.org/10.1371/journal.pone.0062499

Jin, Y. (2020). Does level-k behavior imply level-k thinking? *Experimental Economics*, 1-24. https://doi.org/10.1007/s10683-020-09656-w

Johnson, E. J., Camerer, C., Sen, S. and Rymon, T. (2002). Detecting Failures of Backward Induction: Monitoring Information Search in Sequential Bargaining. *Journal of Economic Theory*, *104*(1), 16-47. https://doi.org/https://doi.org/10.1006/jeth.2001.2850

Johnson, S. G. B. and Rips, L. J. (2015). Do the right thing: The assumption of optimality in lay decision theory and causal judgment. *Cognitive Psychology*, *77*, 42-76. https://doi.org/10.1016/j.cogpsych.2015.01.003

Kang, M. J. and Camerer, C. (2018). Measured anxiety affects choices in experimental "clock" games. *Research in Economics*, *72*(1), 49-64. https://doi.org/https://doi.org/10.1016/j.rie.2017.02.002

Kausel, E. (2017). Assessing others' risk-taking behavior from their affective states: experimental evidence using a stag hunt game. *Games*, *8*(1), 9. https://doi.org/10.3390/g8010009

Kearns, M., Judd, S., Tan, J. and Wortman, J. (2009). Behavioral experiments on biased voting in networks. *Proceedings of the National Academy of Sciences of the United States of America*, *106*(5), 1347-1352. https://doi.org/10.1073/pnas.0808147106

Kostelic, K. (2020). Guessing the game: an individual's awareness and assessment of a game's existence. *Games*, *11*(2), 17. https://doi.org/10.3390/g11020017

Kreps, D. M. and Wilson, R. (1982). Reputation and imperfect information. *Journal of Economic Theory*, *27*(2), 253-279. https://doi.org/10.1016/0022-0531(82)90030-8

Laing, J. D. and Morrison, R. J. (1974). Sequential games of status. *Behavioral Science*, *19*(3), 177-196. https://doi.org/10.1002/bs.3830190304

Leland, J. and Schneider, M. (2015). Salience and strategy choice in 2 × 2 games. *Games*, *6*(4), 521-559. https://doi.org/10.3390/g6040521

Levine, S. S., Bernard, M. and Nagel, R. (2017). Strategic intelligence: the cognitive capability to anticipate competitor behavior. *Strategic Management Journal*, *38*(12), 2390-2423. https://doi.org/10.1002/smj.2660

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J. and Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *PLoS Medicine*, *6*(7), e1000100. https://doi.org/10.1371/journal.pmed.1000100

Lindqvist, E. and Vestman, R. (2011). The labor market returns to cognitive and noncognitive ability: Evidence from the swedish enlistment. *American Economic Journal: Applied Economics*, *3*(1), 101-128. https://doi.org/10.1257/app.3.1.101

Lindsay, L. (2019). Adaptive loss aversion and market experience. *Journal of Economic Behavior & Organization*, *168*, 43-61. https://doi.org/https://doi.org/10.1016/j.jebo.2019.09.023

Macro, D. and Weesie, J. (2016). Inequalities between others do matter: evidence from multiplayer dictator games. *Games*, *7*(2), 11. https://doi.org/10.3390/g7020011

Maqbool, Z., Makhijani, N., Pammi, V. S. C. and Dutt, V. (2017). Effects of motivation: rewarding hackers for undetected attacks cause analysts to perform poorly. *Human Factors*, *59*(3), 420-431. https://doi.org/10.1177/0018720816681888

Martin, C. F., Biro, D. and Matsuzawa, T. (2014). The Arena System: A novel shared touch-panel apparatus for the study of chimpanzee social interaction and cognition. *Behavior Research Methods*, *46*(3), 611-618. https://doi.org/10.3758/s13428-013-0418-y

Martin, D. (2017). Strategic pricing with rational inattention to quality. *Games and Economic Behavior*, *104*, 131-145. https://doi.org/10.1016/j.geb.2017.03.007

Mäs, M. and Nax, H. H. (2016). A behavioral study of "noise" in coordination games. *Journal of Economic Theory*, *162*, 195-208. https://doi.org/10.1016/j.jet.2015.12.010

McCabe, K. A., Rigdon, M. L. and Smith, V. L. (2003). Positive reciprocity and intentions in trust games. *Journal of Economic Behavior & Organization*, *52*(2), 267-275. https://doi.org/https://doi.org/10.1016/S0167-2681(03)00003-9

McCubbins, M. D. and Turner, M. (2014). Are individuals fickle-minded? In *Rethinking the individualism-holism debate* (pp. 237-252). Springer International Publishing. https://doi.org/10.1007/978-3-319-05344-8_13

McFadden, D. (1976). Quantal choice analysis: a survey. *Annals of Economic and Social Measurement*, *5*(4), 363-390. https://bit.ly/3Al0IQT

McKelvey, R. D. and Palfrey, T. R. (1995). Quantal response equilibria for normal form games. *Games and Economic Behavior*, *10*(1), 6-38. https://doi.org/10.1006/game.1995.1023

Mejía, S. R., Pinos, L. G., Proaño, W. B. and Rojas, J. B. (2019). Expectativas empresariales y ciclo económico de la economía ecuatoriana. *Podium*, (36), 1-22. https://doi.org/10.31095/podium.201

Mohlin, E., Östling, R. and Wang, J. T. (2020). Learning by similarity-weighted imitation in winner-takes-all games. *Games and Economic Behavior*, *120*, 225-245. https://doi.org/https://doi.org/10.1016/j.geb.2019.12.008

Moinas, S. and Pouget, S. (2013). The bubble game: an experimental study of speculation. *Econometrica*, *81*(4), 1507-1539. https://doi.org/10.3982/ecta9433

Morell, A. (2019). The short arm of guilt. An experiment on group identity and guilt aversion. *Journal of Economic Behavior & Organization*, *166*, 332-345. https://doi.org/10.1016/j.jebo.2019.06.022

Nachbar, J. (2020). Learning in games. In *Complex Social and Behavioral Systems* (pp. 485-498). Springer US. https://doi.org/10.1007/978-1-0716-0368-0_307

Nagatsu, M. and Lisciandra, C. (2021). Why Is behavioral game theory a game for economists? The concept of beliefs in equilibrium. In *A Genealogy of Self-Interest in Economics*. https://doi.org/10.1007/978-981-15-9395-6_17

Napoli, A. and Fum, D. (2010). UC Merced Proceedings of the Annual Meeting of the Cognitive Science Society Title Mentalizing in games: A subtractive behavioral study of Prisoner's Dilemma Mentalizing in games: A subtractive behavioral study of Prisoner's Dilemma. *Proceedings of the Annual Meeting of the Cognitive Science Society*, *32*(32), 32.

Funes Neira, C. (2015). Bases de datos para la investigación en economía. *Serie Bibliotecología y Gestión de Información.*, *94*. https://bit.ly/3AqeQsg

Peeters, R. and Vorsatz, M. (2018). *Simple guilt and cooperation*. University of Otago Economics Discussion Papers. https://bit.ly/3JVN4Xr

Penczynski, S. P. (2016). Strategic thinking: The influence of the game. *Journal of Economic Behavior and Organization*, *128*, 72-84. https://doi.org/10.1016/j.jebo.2016.05.006

Poundstone, W. (1992). *Prisoner's dilemma*. Doubleday.

Póvoa, A. C. S., Pech, W. and Woiciekovski, E. (2020). Trust and social preferences: A cross-cultural experiment. *Journal of Behavioral and Experimental Economics*, *86*, 101526. https://doi.org/https://doi.org/10.1016/j.socec.2020.101526

Proto, E., Rustichini, A. and Sofianos, A. (2019). Intelligence, personality, and gains from cooperation in repeated interactions. *Journal of Political Economy*, *127*(3), 1351-1390. https://doi.org/10.1086/701355

Radner, R. (1980). Collusive behavior in noncooperative epsilon-equilibria of oligopolies with long but finite lives. *Journal of Economic Theory*, *22*(2), 136-154. https://doi.org/10.1016/0022-0531(80)90037-X

Rauhut, H. (2015). Stronger inspection incentives, less crime? Further experimental evidence on inspection games. *Rationality and Society*, *27*(4), 414-454. https://doi.org/10.1177/1043463115576140

Regner, T. (2014). Social preferences? Google Answers! *Games and Economic Behavior*, *85*, 188-209.

https://doi.org/https://doi.org/10.1016/j.geb.2014.01.013

Roberts, M. E. and Goldstone, R. L. (2011). Adaptive group coordination and role differentiation. *PLoS ONE*, *6*(7), e22377. https://doi.org/10.1371/journal.pone.0022377

Sacconi, L., Faillo, M. and Ottone, S. (2011). Contractarian compliance and the "sense of justice": A behavioral conformity model and its experimental support. *Analyse Und Kritik*, *2011*(1), 271-310. https://doi.org/10.1515/auk-2011-0120

Sah, S. and Read, D. (2020). Mind the (Information) gap: Strategic nondisclosure by marketers and interventions to increase consumer deliberation. *Journal of Experimental Psychology: Applied*, *26*(3), 432-452. https://doi.org/10.1037/xap0000260

Scharlemann, J. P. W., Eckel, C. C., Kacelnik, A. and Wilson, R. K. (2001). The value of a smile: Game theory with a human face. *Journal of Economic Psychology*, *22*(5), 617-640. https://doi.org/10.1016/S0167-4870(01)00059-9

Selten, R. (1978). The chain store paradox. *Theory and Decision*, *9*(2), 127-159. https://doi.org/10.1007/BF00131770

Simon, H. A. (1990). Bounded rationality. In *Utility and Probability* (pp. 15-18). Palgrave Macmillan UK. https://doi.org/10.1007/978-1-349-20568-4_5

Song, F. (2008). Trust and reciprocity behavior and behavioral forecasts: Individuals versus group-representatives. *Games and Economic Behavior*, *62*(2), 675-696. https://doi.org/https://doi.org/10.1016/j.geb.2007.06.002

Song, F. (2009). Intergroup trust and reciprocity in strategic interactions: Effects of group decision-making mechanisms. *Organizational Behavior and Human Decision Processes*, *108*(1), 164-173. https://doi.org/https://doi.org/10.1016/j.obhdp.2008.06.005

Srivastava, J., Chakravarti, D. and Rapoport, A. (2000). Price and margin negotiations in marketing channels: An experimental study of sequential bargaining under one-sided uncertainty and opportunity cost of delay. *Marketing Science*, *19*(2), 163-184. https://doi.org/10.1287/mksc.19.2.163.11806

Sutter, M., Zoller, C. and Glätzle-Rützler, D. (2019). Economic behavior of children and adolescents. A first survey of experimental economics results. *European Economic Review*, *111*, 98-121. https://doi.org/10.1016/j.euroecorev.2018.09.004

Tarrant, C., Colman, A. M. and Stokes, T. (2008). Past experience, "shadow of the future", and patient trust: A cross-sectional survey. *British Journal of General Practice*, *58*(556), 780-783. https://doi.org/10.3399/bjgp08X342615

Von Neumann, J. and Morgenstern, O. (1930). Theory of games and economic behavior. In *Theory of Games and Economic Behavior*. https://doi.org/10.1086/286866

Weizsäcker, G. (2003). Ignoring the rationality of others: Evidence from experimental normal-form games. *Games and Economic Behavior*, *44*(1), 145-171. https://doi.org/10.1016/S0899-8256(03)00017-4

Woon, J. (2018). Primaries and candidate polarization: behavioral theory and experimental evidence. *American Political Science Review*, *112*(4), 826-843. https://doi.org/10.1017/S0003055418000515

Wu, J. (2018). Indirect higher order beliefs and cooperation. *Experimental Economics*, *21*(4), 858-876. https://doi.org/10.1007/s10683-017-9555-y

Yang, Y. and Liu, L. (2019). Strategic uncertainty, coordination failure and emergence: A game theory study on agency-structure interactions. *Journal for the Theory of Social Behaviour*, *49*(4), 402-420. https://doi.org/10.1111/jtsb.12215

Zeitzoff, T. (2014). Anger, exposure to violence, and intragroup conflict: A "Lab in the Field" experiment in Southern Israel. *Political Psychology*, *35*(3), 309-335. https://doi.org/10.1111/pops.12065

Comparative management of West colonizing enterprises: a heterodox review

Methodology

The study was descriptive and explanatory to clarify the variables of the colonizing paradox of the American West, as well as to understand their relationship and development according to economic theory and experience.
It is a fundamental review study due to the combination of heterodox approaches, such as the Austrian and Institutionalist School.

Objective

To review the colonizing process of the American West (from Pennsylvania to Illinois), from heterodox approaches (Austrian and Institutionalist)
to provide complexity and realism about the utopian experiences undertaken.

Introduction

Given the tendency to reductionism and anachronism of the vision of American economic history, the paper offers a critical review of the colonization process in the West,
which was not the result of state planning but of private initiative, of free, thrifty and industrious individuals, who constituted novel colonizing enterprises.

Result or conclusion 1

The colonization of the American West was achieved through the utopian experiences
of alt-cap (commercial capitalism as an alternative to mercantilism and the emerging industrial capitalism) and an-cap (novel private colonizing enterprises in the form of community, cooperative, mutual, etc.).

Results or conclusion 2

The colonizing enterprises were religious and ideological, resulting more efficient and sustainable;
the religious versus the ideological, as there was no coercive centralized planning, and they were inspired by an ethic of profit.

Result or conclusion 3

The colonizing enterprises lost relevance due to:
a) having achieved their objective;
b) their transformation into companies on the scale of industrial capitalism;
c) the pressures of the standardizing model of the federal nation-state, etc.
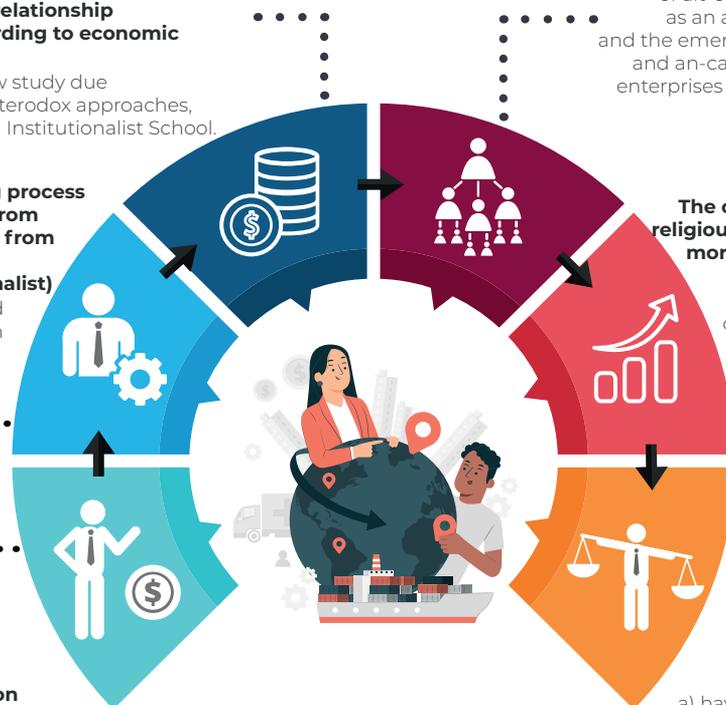
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Comparative management of West colonizing enterprises: a heterodox review

Gestión comparada de empresas colonizadoras del Oeste americano: una revisión heterodoxa

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Abstract: this review provides for the first time a systematization of real anarcho-capitalist experiences during the colonization of the West in the United States of America. This process of continental integration of the country was not the result of state planning and its technological impulse, as assumed by the mainstream; it was the entrepreneurship of private companies, in the form of community farms and trading their surplus. In this study, the theoretical and methodological frameworks are critically reviewed, with the help of heterodox economic approaches, extracting the theorems and empirical observations to consider in the examination of colonizing experiences, from Pennsylvania to Illinois. Through a comparative analysis of case studies selected from primary sources, an identifying and classifying saturation of assumptions is reached, establishing a robust enabling systematization for the contrast between religious and ideological colonizing companies. These companies are evaluated for their efficiency and sustainability, to resolve the colonizing paradox of the American West: why religious companies, being the first to arrive and with less outlay, are more successful than ideological ones. This is a critical-hermeneutical and historical-comparative study of Political Economy and History of Economy and Institutions, according to heterodox approaches mix, for the refutation of errors assumed in the colonization of the West, in addition to confirming the viability of the anarcho-capitalists experiences.

Keywords: economic history, political economy, macroeconomics, heterodox approaches, colonial enterprises, religious factor, comparative management, United States of America.

Resumen: esta revisión aporta por primera vez una sistematización de las experiencias reales anarcocapitalistas durante la colonización del Oeste de Estados Unidos de América. Este proceso de integración continental del país no fue el efecto de una planificación estatal y su impulso tecnológico, como supone el modelo ortodoxo, sino que fue el resultado de la iniciativa de empresas privadas en forma de granjas comunitarias, comercializando sus excedentes. Este trabajo revisa críticamente los marcos teóricos y metodológicos, con la ayuda de los enfoques económicos heterodoxos, extrayendo los teoremas y observaciones empíricas a considerar en el examen de las experiencias colonizadoras, desde Pensilvania a Illinois. A través del análisis comparado de estudio de casos de fuentes primarias, se llega a una saturación identificativa y clasificadora de supuestos, siendo suficiente para fijar una robusta sistematización habilitadora para el contraste entre empresas colonizadoras religiosas e ideológicas. Estas empresas son evaluadas en su eficiencia y sostenibilidad, con el fin de resolver la paradoja colonizadora del Oeste estadounidense: por qué las empresas religiosas, siendo las primeras en llegar y con menor desembolso, resultan más exitosas que las ideológicas. Se trata de un estudio crítico-hermenéutico e histórico-comparado de economía política e historia económica y de las instituciones, desde la combinación de enfoques heterodoxos, para la refutación de errores asumidos en la colonización del Oeste, además de confirmar la viabilidad de las experiencias anarcocapitalistas.

Palabras clave: historia económica, economía política, macroeconomía, enfoques heterodoxos, empresas coloniales, factor religioso, gestión comparada, Estados Unidos de América.

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Introduction

After the Great Recession of 2008, mainstream or orthodox economics with its positivist-formal model of neoclassical synthesis for the development of the state welfare economy, was rejected since it not only failed to detect the crisis, but was blamed for it (Keen, 2011). Since then, the economy has been guided by the MIT boys or neo-Keynesians normativist *lato sensu* (including post-Keynesians), with their anachronistic interpretations (from identity politics) and transvaluation exercises (what used to be the market is now the State; savings are discouraged and spending is stimulated; growth and development are separated, in addition to postulating theses of degrowth -even post-growth-decoupling, de-globalization, etc.). In this review, a hermeneutic turn is introduced (Sánchez-Bayón, 2020) offering the alternative of heterodox approaches (Austrian, institutionalist, cultural, etc.), in addition to proposing a Copernican revolution (back to the stage prior to the deviation of approaches): for this reason the focus is on the take-off of capitalism and the American growth and development model in the 19th century (according to the American historiography itself prior to the arrival of the aforementioned normative neo-Keynesians). At that time, the State was minimal and was being reformulated (especially with the Civil War, 1861-1864), and the economic agents generating change were family businesses and cooperatives (nor had businesses and families been split off as independent economic agents, as would later be presumed in the neoclassical synthesis); moreover, the theoretical and methodological frameworks were those of Political Economy.

The mainstream version tends to assume a reductionist and anachronistic thesis on American growth and development by internalizing a trilemma (see below). This official thesis attributes the colonizing process of the American West to the State and its promotion of technological advances (e.g., the railroad, the telegraph). Thus, it is assumed that, once the Civil War ended, the economic model of the Northern States (industrial and autochthonous WASP -acronym for white Anglo-Saxon Protestants-, Baltzell, 1962, 1964) was imposed on the South (agrarian and religiously dependent on Europe -i.e. Anglicans and Catholics), thus generalizing massive industrial capitalism and the success of national integration. The fiction of an American economic and monetary union has been assumed from the beginning, but in reality, there was a trickle of state annexations, with different levels of development and competing economic models. In contrast to this minimal vision (almost mono-causal -and today reinterpreted in an identitarian and anti-capitalist key), a more complex review is presented, adjusted to the nineteenth-century reality, provided by the combination of heterodox approaches (attentive to socio-cultural issues, as well as contemporaneous with colonization).

The review presented refutes the aforementioned erroneous reductionism, at least in three of its main inferences, impostures and fallacies (with weasel and polylogistic concepts according to the Austrians; Hayek, 1952a, 1952b; Mises, 1957), related among themselves and informing the assumed macroeconomic model: Protestant error, communist-utopian error, macro-technological error. Beyond the punctual refutation (of each error), an integrative and alternative re-reading is offered (closer to reality and not mathematizing or autistic, as the mainstream vision is qualified, Romer, 2015; Alcorn and Solarz, 2006). Thus, key socioeconomic actors and institutions in American economic growth and development are recovered, such as the utopian movements and their novel religious and ideological colonial enterprises that compete to conquest the West. A systematization is offered in this regard, as well as an assessment of efficiency and sustainability across projects. In the end, a less limited (according to mainstream common wisdom, Galbraith, 1958), and richer view will be available about the nineteenth-century process that led to the coast-to-coast integration of the country, laying the present-day foundations of the USA.

Theoretical and methodological frameworks

The trilemma underpinning the mainstream view that needs to be revised is the following (due to the mainline heterodox):

- Protestant error: Weberian thesis (Weber, 1905), in assuming the supposed Protestant homogeneity and superiority (as opposed to Catholicism, above all) and its ethics as the driving force of capitalism, being just the opposite (until the 19th century, there are cases of capitalist success in both Protestant and Catholic countries, for example, in Europe: Belgium, France, Naples, etc.; in America: Maryland or Cuba). It turns out that it is capitalism that favors the development of Protestantism, by promoting religious freedom, Church-State separation and the competitiveness of the spiritual market, promoting new foundations (Cox, 1964; Sánchez-Bayón, 2014, 2018).

- Communist-utopian error: socialist thesis (Noyes, 1870; Hillquit, 1903), on its supposed moral and efficiency superiority, an argument already refuted by those who did visit the colonizing experiences of the American West (Nordhoff, 1875; Hinds, 1878, 1908), observing that until the 19th century, anarchism and communism in the USA were received as religious (Rothbard, 1995; Stokes, 1950); then philosophical (American Individualist Anarchism, Madison, 1945; Martin, 1951; Martin, 1951; Stokes, 1950), until the nineteenth century, anarchism and communism received was religious (Rothbard, 1995; Stokes, 1950); then philosophical (American Individualist Anarchism, Madison, 1945; Martin, 1953); finally, anarchism and communism have been interpreted in a socialist ideological key). The utopian error is based on a thesis popularized by Marx and Engels (1848, ch. 3), in dealing with "utopian-critical socialism or communism". Despite the initial scorn, thanks to the reinterpretation of later Fabian socialists (such as the generation of progressive and skeptical historians, see below), the idea of the benevolent socialist utopia has spread (already dismantled by economic historians such as Hartwell et al.,1994; Hartwell, 1971; Rothbard, 1995). In reality, socialist utopias had a life expectancy of less than three years, as opposed to several generations of religious utopias, which did

provide experiments in new social models (such as mutualism, cooperativism, etc.).

- Macro-technological error: it starts with progressive historians (Beard, 1913, 1921), with socio-economic theses on productive forces as the historical engine. This approach was merged by skeptics with the technological factor (Hofstadter and Olson, 1986; Lipset, 1996) and taken up by the MIT boys. Thus, the technological error of state impulse (with revivals, Mazzucato, 2013), was already refuted by neo-institutionalist authors such as Fogel (1964), minimizing the role of technologies such as the train (via private concessions, e.g. Mohawk & Hudson Railroad, Saratoga & Schenectady Railroad), to achieve the integration of the country (with a late estimated contribution of 2 % in the growth of national GDP in the 1890s). Even from neo-institutionalism and Cultural Economics-CE, the role of the religious factor (with its religious awakenings and revitalizations) in the growth and development of the U.S. was considered key (Fogel, 2000; Fogel and Engerman, 1974).

The trilemma as a whole has served to confuse and reinforce the macroeconomic error of believing that the U.S. economic growth and development model has been unique and constant since the 19th century. A widespread and dominant industrial capitalism has been taken for granted (especially after the Civil War, with the imposition of the northern industrial WASP model on the entire country). In reality, in the 19th century, there were simultaneously other economic systems (such as the commercial capitalism of the colonial companies in the West or the mercantilism of the southern plantations -which did not disappear immediately-). Industrial capitalism only began to spread massively in the wake of the second industrial, technological and energy revolution of the 1880s (after the reconstruction period and the great recession). Therefore, in this review of the U.S. nineteenth-century macroeconomic model, the aim is to recover the contributions of the commercial capitalism of the colonizing companies, which, thanks to their surplus of provisions and utensils (staple approach of EI, NIE and EC), were

able to guarantee the advance in the connection of the country's coasts. Therefore, neither the State nor technology were determinant in the colonizing process (their role was more relevant after the second industrial revolution and the reinforcement of the federal State with the expansion to the South); what was key was the competition between private colonizing companies of a religious and ideological nature, some being more efficient and sustainable than others.

Corpus selection criteria

In order to systematize the aforementioned colonizing companies and to be able to assess their level of efficiency and sustainability, the following heterodox (yet complementary to each other and constitutive of the mainline, Boettke *et al.*, 2016) contributions have been combined:

- Austrian School of Economics (SEA): Mises' theorem on the economic impossibility of socialism (Mises, 1922, 1929, 1933, 1944), revised by Hayek (1944, 1988), then extended to any centralized coercive interventionism and repressor of freedom, according to Hoppe (1989) and Huerta de Soto (1992), is followed by Mises' theorem on the economic impossibility of socialism (Mises, 1922, 1929, 1933, 1944). Mises' theorem has the corollary of the Buchanan-Tullock public choice theorems. Another key idea is Hayek's thesis on spontaneous order (developing Smith's invisible hand, 1776), in favor of evolutionary social institutions (Hayek, 1946; 1952a, 1952b). In methodological terms, SEA offers various resources from its beginnings, with its methodenstreit or method dispute (Menger, 1883; Mises, 1929, 1933; Huerta de Soto, 1992, 2000; Hoppe, 1995).

- Anarcho-capitalism (Ancap): this study pays attention to the contributions of the American Individualist Anarchist, with complementary readings of EAE (Veysey, 1973) and Public choice (Tullock, 1972,1974). This review attends to Rothbard's axiom (on property and free

enterprise as the key to development) and to the homestead principle (appropriation of land through work, consolidating the right to property. Rothbard, 1973). Historically, this explains (thanks to decentralization and separation of powers) the transition from the small colonies of New England to the large colonies of the Middle Provinces and the Western territories (Rothbard, 1975-1979; Sánchez-Bayón, 2014, 2018), as well as the transition from main-line churches or hierarchical churches (close to the established power) to evangelical churches (communitarian in nature). Methodologically, this review observes the rules of free research (according to the anarchist approach, it is better to find than to confirm, Feyerabend, 1975; Escohotado, 2008-2016).

- Institutionalist approach (IA): this review focuses on two currents of American institutionalism, one being the nineteenth-century or traditional (historical-sociological and pragmatic-anti-formalist), and the other, the neo-institutional of the twentieth century. The traditional current offered a more comprehensive than quantitative economics (unlike the contemporary neoclassical monetarists, e.g., Clark, Fisher), with very popular exponents in its time, such as Veblen (a student of Peirce -a great pragmatist- and of Rev. Sumner -evolutionist; in addition to economics, he taught sociology and Church-State Studies), Hamilton (of the juridical-sociological movement American Legal realism), Commons (Georgist social reformer) or Dewey (pragmatist); with a second generation, with Mitchell or Ayres (disciples of Veblen and Dewey). Semi-institutionalist authors such as Schumpeter and Galbraith are related to this current. From IA, contributions such as Rostow's "modernization model and the phases of growth and development" (1959, 1960, 1961), plus Gerschenkron's critique of economic backwardness (1962) have been used. Other interdisciplinary approaches close to CE and very much present in Religion & Economics have also been con-

sidered; see above): American awakenings and revivals, American exceptionalism, melting pot, stapple approach, etc.

- Neo-institutionalist approach of the new political economy (NIE-NEP): from Law & Economics Coase's theorem on the firm and transactional cost is important (Coase, 1937, 1960). Public choice offers a series of Buchanan-Tullock theorems on interventionism, which means the end of political romanticism and its paternalistic state, because there are many power games in decisions, with correlated effects: rent-seeking, clientelism, crony capitalism, inconclusive and inclusive agenda, etc. (Buchanan and Tullock, 1962). Constitutional Economics offers Buchanan's theorem on the relevance of rules (Brennan and Buchanan, 1985; Buchanan, 1986, 1987, 1990, in agreement with Hayek, 1960, 1973). Combining the above approaches to R&E, the driving work of Tollison (1989, 2003, 2006) is key. Cliometrics offers empirical observations such as those already raised by Fogel (on technologies, the religious factor, etc.). Currently, there has been a revival of NIE, with Nobel laureates in economics, such as Ostrom and Williamson, and candidate authors such as Acemoglu and Robinson (2012, 2019).

The frameworks offered by the selected heterodox economic approaches are alternative to the mainstream (for their revision of fundamentals) and complementary to each other (considering economy as a process of creativity and freedom, where rational individuals and pro-incentive institutions interact for greater welfare): (a) SEA offers a positive economics, based on principles and deductive method (Menger, 1871; Mises, 1949; Huerta de Soto, 2000); (b) Ancap offers a normative economics focused on the realization of its principles (Rothbard, 1962, 1973; Hoppe, 1993); c) IA offers a positive economics based on the combination of principles and experiences, in addition to resorting to deductive and inductive methods (which makes it possible to speak of general rules and conjunctural or idiosyncratic expressions); d) NIE gathers the acquis of the previous ones, in addition to bringing approaches closer to the mainstream; it includes the main disciplinary developments within NEP (including the possibilist approach, Hirschman, 1970, 1993). Other arguments in favor of the use of heterodox approaches are: a) their coeval status with the object of study (as a 19th century mainline, see Figure 1: unlike the neoclassical synthesis approach, which is more than a century and a half away), thus avoiding complementary anachronistic errors; b) their combined use by the Religion & Economics-R&E discipline (since the 1970s, in the framework of CE).

The cited frameworks were incorporated into R&E[1] (Boettke, 2005), along with others from CE (VV.AA., 1972, 2014; Walsh, 2000), such as religious factor and frontier (with its cycles of awakenings and revitalizations; Sánchez-Bayón, 2014, 2018), denominationalism, social gospel, American covenant Theology, staple approach or method of entry of utopias (Arcadianism, anarchism, millenarianism, moral reform programs, etc.).

The state of the art differs from the usual, given the novelty of approaches and combination of frameworks (except for some sectoral incursions, such as Anderson and Hill, 1979, 2004; Veysey, 1973). Therefore, a specialized bibliometric study

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1 Discipline emancipated from Church-State Studies (Stokes, 1950; Wood *et al.*, 1958) in the 1970s and divided with the culture wars (Sánchez-Bayón, 2014, 2018): a) consensus line with studies on ecumenical relations, denominationalism and competition, etc.; b) critical line that focuses in problems of minorities and discrimination, inequality, etc. Since globalization, there has been an emergence of the discipline, with the label Economics of Religion (JEL code Z12 and promoted by the Cultural Economics approach). It has several think-thanks, notably the Institute for the Study of Religion, Economics and Society at Chapman University, under the direction of Prof. Iannaccone (1998), in collaboration with the Association for the Study of Religion, Economics and Culture at Pennsylvania State University, together with the J. Templeton Foundation and the National Science Foundation, etc.; there are also many interdisciplinary programs and lines of research on the subject at Ivy League universities (e.g., Harvard: Barro and McCleary, 2003, 2006). Currently, there is a recovery of the original name, with initiatives such as the Religion & Economics Collection in The Quaterly Journal of Economics, supported by Harvard and Oxford universities, plus half a hundred well-indexed specialized journals (see Figure 2).

of the scientific production of R&E related to the subject was the starting point, and a thematic and journal map was drawn up (see Figure 2). In doing so, the set of key secondary sources for the study of the utopias or colonizing enterprises of the American West (Wooster, 1924; Tyler, 1944; Bestor, 1950; Cohen, 1973; Fogarty, 1972, 1980, 1990), plus their later revival (Gairdner *et al.*, 1980; Berry, 1992; Kephart, 1998; Friesen, 2004; Curl, 2012), supplemented by lots of encyclopedic and documentary works on socio-religious life in the USA (Lippy and Williams, 1998; Mead, 1975;

Melton, 1989; Menéndez, 1976; Noonan and Gafney, 2001; Olson and Djupe, 2003; Queen *et al.*, 1996; Smith and Jameson, 1961). Subsequently, the review has been refined, contrasting primary sources such as the Owen epistles (between father and son and with Rapp, digitized by the Indiana Historical Society) with Cabet and Smith (digitized by the International Institute of Social History); along with travelers of utopias *in situ* such as Noyes (1870), Nordhoff (1875), Hinds (1878, 1908) or Hillquit (1903).

Figure 1

*List of economic approaches and schools of economics*
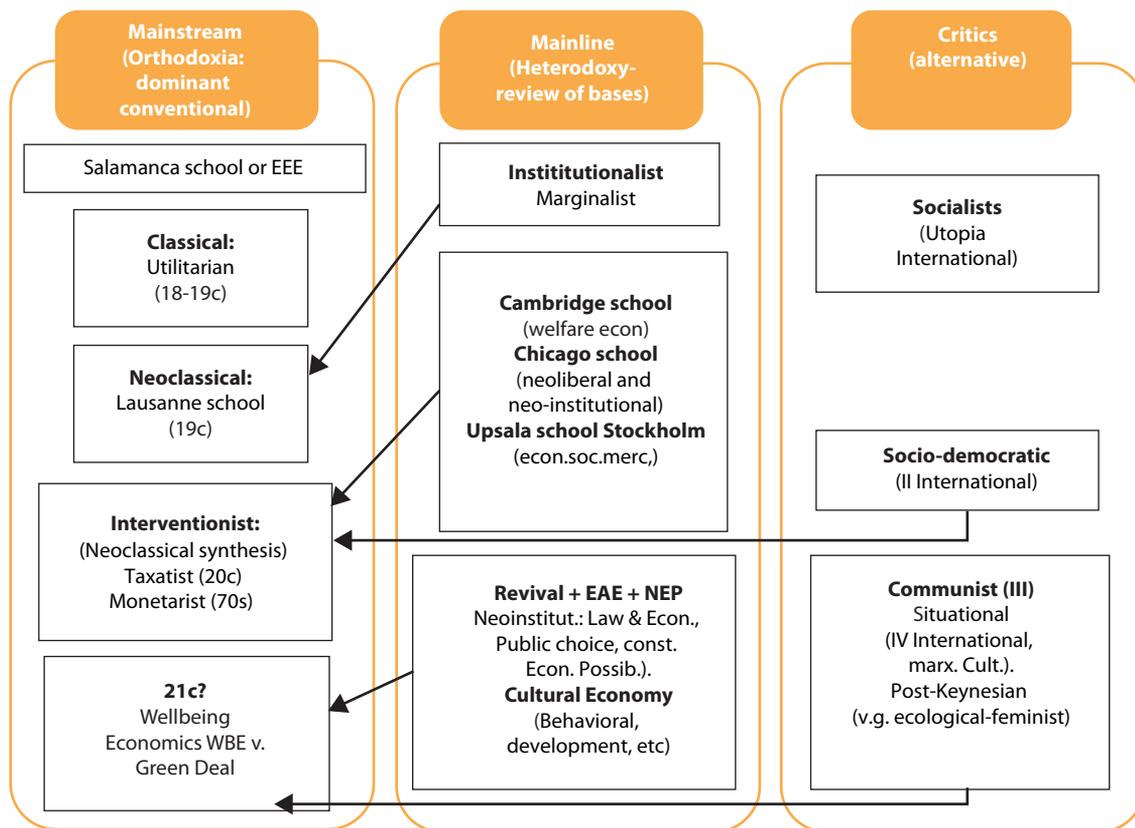
Figure 2

R&E Bibliometrics (subjects and journals)
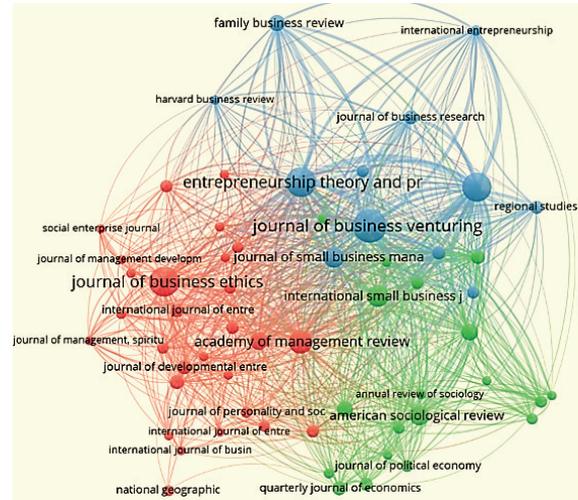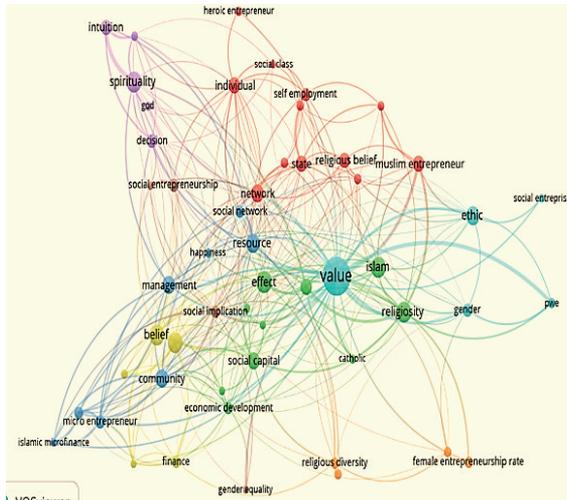
Note. Block *et al.*, 2020.

Contributions to the state of the art: systematization of cases

The demarcation criterion set to select which cases to attend (and its saturation: when including some other assumption lacks marginal utility), responds to the following coordinates: a) spatial: the territories of the Western USA (from Pennsylvania to Illinois, open only to free and indebted people, with savings and talent for colonization); b) temporal: the 19th century, between the pre-deprivation, maturity and mass consumption stage, accompanied by milestones such as the 2nd religious awakening and the (Farm)Land Acts, favoring the colonizing process in the interior of the country; c) material: focusing on the new type of enterprise, such as cooperatives (in the form of farms and community workshops), which some will be reconverted into corporations in order to survive in the second industrial revolution. As for the main working hypothesis: the aim is to prove the existence of anarcho-capitalist experiences (of private and voluntary initiative) and to study their viability as an alternative socio-economic model, as well as to compare which turned out to be more efficient and sustainable. In short, the cases are presented chro-

nologically and as a whole (from the pioneering sects to the subsequent ideological utopias, with their most idiosyncratic experiences).

The systematization of cases is as follows (Noyes, 1870; Nordhoff, 1875; Hinds, 1878, 1908; Hillquit, 1903): 1) Religious enterprises (dissident, perfectionist and millenarian sects): a) transplanted traditionalists (e.g., Shakers, Rappites, Amanites), (b) autochthonous superventists (e.g., Jehovah's Witnesses, Mormons); 2) Social laboratories and intellectual communes (e.g., Fruitlands, Brook Farm); 3) Ideological enterprises: a) nationalist (by nations of origin and ethnicity), b) socialist (e.g., Icarists, Owenites, Fourierites), c) mixed (e.g., Georgists, Freemasons, Vegans, Love-Free).

Religious enterprises: dissident sects, perfectionists and millenarians

The focus of the colonizing enterprise began with the aforementioned Holy Experiment in Pennsylvania, where the Quakers (or religious Society of Friends - Christian anarchists, not accepting dogmas, hierarchies, civil power over religion, etc.) had become the largest private landowners (by royal concession or purchase, they had some 120 000 km^2). To ensure their land con-

servation and political expansion (giving rise to new States), and given their own industriousness, they initiated the largest entrepreneurial project of their time, as an alternative to the mercantilism of the time (in six months they had parceled up more than 300 000 acres to begin the experience). As opposed to the oligopolistic companies with royal concessions and servitude contracts (for example, London Company, Plymouth Company - and other merchant adventurers), the Quaker shipping company looked for free and hard-working people who could pay a symbolic price for the trip and the acquisition of land, committing themselves to the establishment of a farm and/or productive workshop, which would favor their sustainability and regional growth. It is understood that the first to arrive were the members of the new Protestant sects, inspired by the Second Religious Awakening and persecuted in Europe.

Figure 3

Nineteenth-century community/cooperative colonizing companies in the U.S.

American utopia
Private colonizing enterprises
(Religious farms v. Ideological experiments)
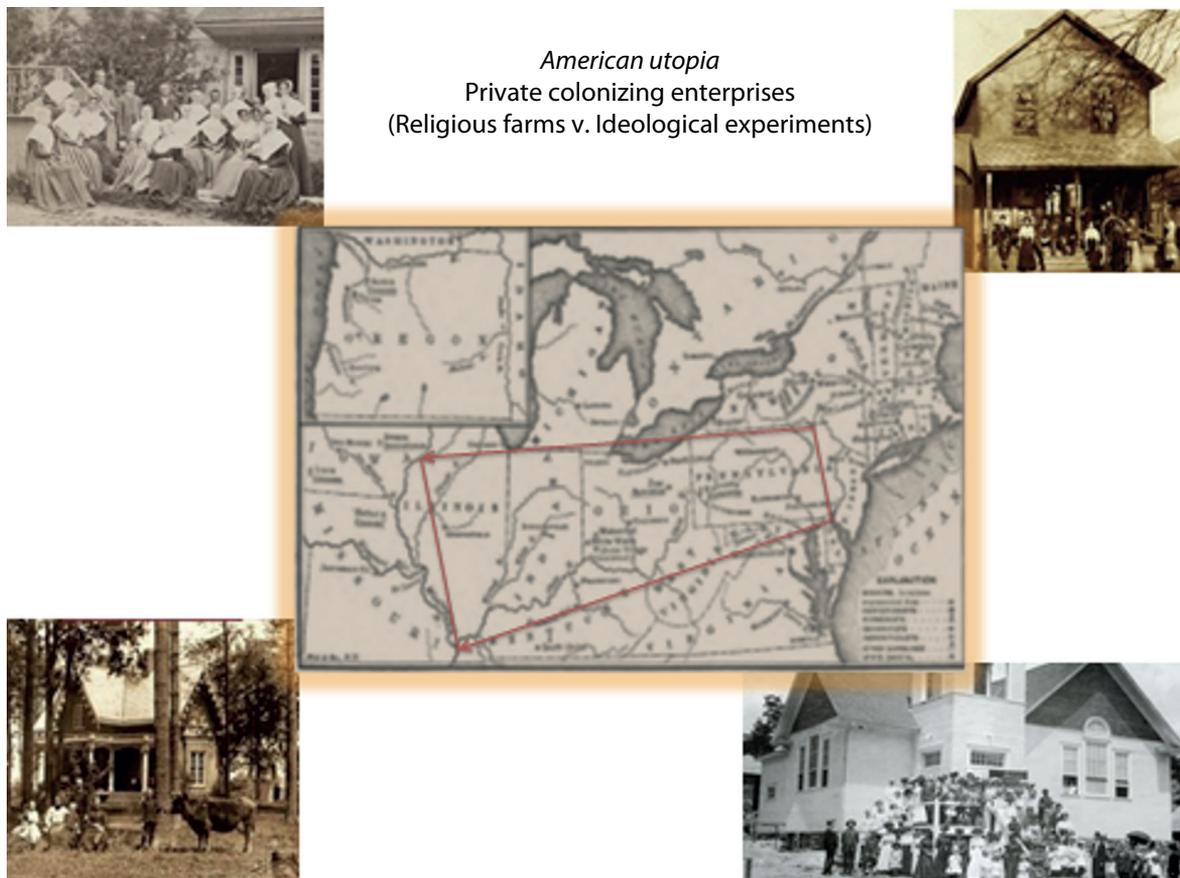
Note. Nordhoff, 1875; Hinds, 1878, 1908.

a. Traditional transplanted

Among the first transplanted religions were the Quakers, who have remained to this day. In addition to their successful farms and workshops, giving way to multiple businesses, which as corporations have continued to the present day: the metallurgical Bethlehem Steel, the financial Sandy

Spring Bank, the communication and later financial company Western Union, the food company Quaker Oats, etc.

The following are the experiences of those sects that came through the Quakers:

- *Dunkers* (also called German Baptist Brethren or Church of the Brethren): this refers to Central European immigrants from religious minorities such as some Anabaptists, part of the Amish, etc., dissidents from Catholicism, Lutheranism and Reformism. They founded their first community farm in Pennsylvania (although with the women's buildings separated from the men's), called the Ephrata Community or Cloister in 1732 (registered as a joint-stock company since 1812 and now declared state cultural heritage), followed by the Snowhill Community (1800), Antietam (1852) and several others, and from these communities they successfully spread westward (some communities even moved to the southeast, with cooperative plantations).

- *Shakers* (the leapers or shakers - for their ceremonial - actually constituted as a United Society of believers in the second coming of Christ): they arrived in Pennsylvania in the 1780s and were nicknamed the quaking Quakers for their ritual dances. They were also the most egalitarian between men and women (with a proactive role for women), highlighting the foundational work of communities of Jane Wardley, Mother Ann Lee or Mother Lucy Wright (who ran orphanages and shelters of the time). In the 19th century there were about 4000 believers distributed in more than 20 main communities and as many small-family ones (New Lebanon, Sabbathday Lake, Shakertown, etc., are among the first and most important, besides persisting until today). They were tremendously industrious (and inventors of utensils), as they considered that work redeemed and improved them as people. Today their settlements have also been declared part of the state cultural heritage

or converted into museums. Their household utensils and tools, for their simplicity, elegance and functionality (in accordance with their creed), are still highly valued and auctioned at high prices.

- *Rappitas* (named after its founder, Johann Georg Rapp, although the official name Harmony Society): it is a split from Lutheranism (and persecuted for it), which arrived in the U.S. in 1803 (because the Quaker shipping company took pity on them and practically gave them a scholarship for the trip, given their very poor situation), moving the headquarters of their society to Pennsylvania in 1805 (lasting until 1905). As a pietist group, it had many similarities with those previously mentioned, so that coexistence was easy. This group, in two years recomposed itself, reached 400 members and began its specialty: the foundation of workshop towns, such as Harmony I (in Pennsylvania), Harmony II (in Indiana), New Harmony (also in Indiana and sold to Owen, for 135,000 dollars - when the land had cost him not even 300 dollars - to try his experiment of utopian socialism, see above), Economy (actually Old Economy Village, in Pennsylvania, characteristic for its furnaces and where Rapp died).

- *Amanitas* (comes from the Song of Songs and means to keep sincere, and its official denomination was the Society of Amana): like the Rappites, they were very persecuted in Germany, arriving in Pennsylvania by the charity and compassion of the Quakers, who not only defrayed their trip, but gave them almost twenty dollars so that they could begin their journey. Their industriousness and thrift proved even more formidable than that of the other sects, for being fewer and having arrived in worse conditions, in a couple of decades they had accumulated a patrimony of almost a million dollars. Their project has continued, knowing how to adapt to industrial capitalism -something that the other communities did not do- giving way

to Amana Refrigeration Inc. from which comes the multinational of Whirlpool household appliances.

- *Religious communal society* (known to its members by its communes: Aurorites and Bethelians): its founder was a young Prussian Lutheran, William Keil, who emigrated to America, settling his family in Pennsylvania. He participated in the New Harmony experiment (both with the Rappietas and Owen, until its dissolution), and then went on to found his own communes: Bethel (Missouri) and Aurora (Oregon). His society combined Lutheran, Pietist and Methodist elements, fused in the golden rule (or reciprocity): treat your neighbor as you would have him treat you. Keil was known for his enthusiasm and for being a healer. He died in 1873 and the society was dissolved in 1883.

b. Autochthonous superventions

We address here the experiments of the new sects that, as a result of the Second Great Religious Awakening (Stokes, 1950; Sánchez-Bayón, 2014, 2018), went from being mainline churches or hierarchical churches of European origin, to become evangelical churches or indigenous community churches, until reaching expressions and almost outside Christianity (secularizing it and transforming it in their own way), such as the Mormons, Jehovah's Witnesses, scientific Christians, etc. In these cases, it is no longer a matter of pietistic movements, in which industriousness and thrift prevail as signs of predestination for salvation, but of enthusiastic groups, oriented towards the community and its solidarity, with very striking social experiments for the time (for example, complex marriages or polygamy).

- *Perfectionist Christians*: is an evangelical branch based on the Presbyterianism of its founder (Rev. Finney), combined with Methodism (in vogue with the Second Great Awakening), and which seeks sanctification through a life dedicated to love. Noyes (considered as an American utopian proto-socialist), influenced by Finney, stu-

died theology, became a preacher (although his license was revoked when he declared himself perfect and sinless in 1834), of great charisma, managed to convince hundreds of people to join his Society of Free Love and its communities: (a) Putney Community (Vermont, 1836), begins as a Bible school, but given the persecution of the authorities (arresting Noyes several times), finally moved to New York; (b) Oneida Community (New York, 1848-1881), is the most important and best known of all, becoming the epicenter for the rest of the communities; c) Communities of Wallingford (Connecticut), Brooklyn (New York), Newark (New Jersey), Cambridge and Putney (Vermont), plus the community of Niagara Falls (in Ontario, Canada), where Noyes finally fled to avoid further arrests. This communal social experiment grew to some three hundred members, who supported themselves through thriving industries (e.g., silk thread production, animal trapping, leather handbags, palm leaf hats, fruit and vegetable growing and, above all, silversmithing).

- *Society of Universal Friends:* its founder was a Quaker from Rhode Island, Jemima Wilkinson, who claimed to have suffered a serious illness in 1776, eventually dying and being resurrected as a genderless evangelical renamed Public Universal Friend (referring to himself in a non-binary way and dressing in an androgynous manner). Taking advantage of the Revolutionary War and with the help of his brethren, he preached the end times, claimed an end to slavery and advocated free will. He came to have a hundred followers, founding two settlements: a) Gore -the friend- (in New York, in 1790 and in 1792 he already had 25 families and a farm); b) Jerusalem (also in New York and where the Home of the Friend is still located, today part of the state cultural patrimony). The founder died in 1819, but his communities continued until the 1860s.

- *Christian Restorationists and Jehovah's Witnesses:* the restorationists pretend to return to the

origins of Christianity, and many of them are also millenarianists, defending the transformation of the world and the second coming. From among the restorationists arose in Pennsylvania the Bible Students movement founded in 1870 by Charles Taze Russell, who founded the Watchtower Tract Society of Zion/Sion (Jerusalem). Thus, a lucrative religious literature distribution business began, which, upon Russell's death, was spun off. Joseph Franklin Rutherford retained control of the society, re-founding it in 1931 (to differentiate it from other Bible study groups), and renaming it Jehovah's Witnesses. Today it has almost nine million followers dedicated to evangelism and, thanks to donations and religious literature, it is one of the richest corporations in New York, with a turnover of some nine hundred and fifty million dollars a year.

- *Mormons* (officially, Church of Jesus Christ of Latter-day Saints): is a type of syncretism, which unites Christianity (restorationist evangelicalism) with other religions (including pre-Columbian and Egyptian hermetic religions). Its denomination (Mormon), comes from its scriptures, the Book of Mormon, who was a Nephite prophet and later angel who appeared to the founder, Joseph Smith, to show him the book and to translate it. Smith began preaching in the 1820s in New York, as a restorationist, and since the 1930s, as a Mormon. In their mission to establish the kingdom of God on earth, the Mormons carried out several foundations: attempted settlements and expulsion with persecution (due to misgivings about their polygamy and other practices that scandalized at the time): Palmyra (New York), Kirtland (Ohio), New Jerusalem or City of Zion (Missouri). Purchase of the city of Commerce (Illinois), renaming it Nauvoo (there was peace and prosperity until Smith was beaten by a mob in 1844). During this period, the Mormons had a relationship with Cabet's Icarists, to whom they sold the city of Nauvoo, and they moved to Utah

(under the direction of Brigham Young they founded Salt Lake City).

Among all the groups presented, it is worth mentioning the corporations of religious origin that have maintained to date: a) the Baptist Mr. Colgate and his hygienic-sanitary company; b) the Evangelicals and their companies such as Pfalzgraff (kitchen utensils, maintained until 2005) or Louisville (ceramics and ornaments, also sold in 2007); c) the Mormons and their hotelier Marriott, etc. More efficient and sustainable were the denominations that opened up to proselytizing and used their production as merchandising or promotional merchandise (for example, Pfalzgraff and Louisville became very popular for their Christmas designs).

Secularizing enterprises: social laboratories and communes of intellectuals

This section is quite complex, since it refers to the set of diverse experiences born of American political theology and its secularizing approaches. Thus, it alludes to the new social philosophies, from the most popular, such as Unitarianism and American Civil Religion-ACR (Sánchez-Bayón, 2018), to the most elitist, such as transcendentalism and pragmatism. Their colonial enterprises were more ephemeral, as their driving intellectuals were more concerned with the development of their social laboratories (in education, culture, social habits, etc.), than with the very subsistence and sustainability of the project. The corollary of Mises (1956) -with respect to his theorem- on the anti-capitalist mentality of the intellectuals is worth mentioning here. Among this type of experiences it is worth mentioning:

- *Transcendentalists:* This is an indigenous current of thought (coming from Unitarianism), which gives rise to intellectual communes, among which Fruitlands (founded in Harvard, in 1842 -with a duration of seven months- by Lane and Alcott, who were unable to make the farm productive, by devoting more time to intellectual labors), and Brook Farm (founded near Boston, between 1844 and 1847, by

the Unitarian minister Replay, with characters of the time, such as the novelist Hawthorne, resulting in a precursor experience of Fouriesianism, see above).

- *Pragmatists and intentional and fraternal communities:* properly American, they include social experiments such as Social freedom community, Hopedale Community (Practical Christianity), Skaneateles and Prairie Home Community (Society for Universal Inquiry), Brotherhood of the new life, Colonies of Anaheim (California)-Vineland (New Jersey)-Silkville (Kansas). New York Experiments.

Utopian ideological experiences

a. Nationalists

There are two lines of research on this matter. On the one hand, to verify whether most of the evangelical communities that emerged after the Second Great Awakening (since 1790), being autochthonous, have a certain American or patriotic nationalist component (as opposed to the main-line churches, which do have a foreign origin, responding to foreign leaders, as in the Anglican case). On the other hand, other immigrant communities with State Church maintain that nationalism with their metropolis and hence the tendency to isolation to maintain their original traditions, as in the cases of Danish Socialist Colony (in Kansas), German Reformed Colonies (in Texas), Bishop Hill Colony (of Swedes in Illinois) or Am Olam (with Jewish agricultural communities all over the country - as a forerunner of the kibbutz). Another line would be that of the Georgist movement (because of its inspirer, Henry George and his work Progress and Poverty of 1879), but given its relations with socialism, perhaps it will go to the mixed block.

b. Socialists

The utopian socialist-inspired communities of the second half of the 19th century are varied, and their experiences can be classified as follows:

- *Icarists:* named after the work Journey to Icaria (1839) by the Frenchman E. Cabet (with egalitarian approaches), who would move to the USA in 1848, helping to promote Icarist communities such as Lousiana, Texas, Iowa, Missouri, California, etc. Nauvoo (in Illinois) stands out for being a project shared with the Mormons (until the lynching of Smith and Young's decision to immigrate to Utah).

- *Owenians:* are named after their inspiration, the paradoxical industrialist and utopian socialist R. Owen (he was the first to generalize the term "socialist" in 1827, to refer to his project of a new society with opportunities for all). He had the support of Dale (Director of the Royal Bank of Scotland -and his father-in-law-) and Bentham, to finance the New Lanark project (a large factory, with social innovations, such as a nursery), intending to repeat it and extend it to a whole city in New Harmony (Indiana). The project failed because he did not select the workers (he hired almost a thousand unqualified workers); he left his son in charge (who surrounded himself with intellectuals without practical experience); the difficulties to obtain more financing (due to the situation at the time), etc. The fact is that Owen lost 4/5 of his fortune, while the four New Harmony newspapers (financed by him) accused him of being a speculator (for not having risked 100% of his wealth). It was such a nonsense that not even visiting the facilities in person was able to fix the situation. In his memoirs, Rapp recalled how sad he felt when he returned to New Harmony to complete the financial transaction, and in less than two years, the city had been left to deteriorate "they had not even re-roofed it," he lamented to himself.

- Based on the postulates of Owenite utopian socialism, there were other experiments: a) Oberlin Colony in Ohio (1833-1843), led by J. J. Shipherd (and eight families); b) Kristeen Community in Indiana (1845-1847), led by C. Mowland,

who had connections with the Universal Search Society (see below); c) Fruit Hills in Ohio (1845-52), led by the anarchist O. S. Murray, who was related to the Universal Search Society (see below). Mowland, who had connections with the Universal Search Society (see below); c) Fruit Hills in Ohio (1845-52), led by anarchist O.S. Murray, who had connections with the Kristeen community; etc.

- *Fourierists:* the reception of the postulates of the French utopian socialist (or, better said, mutalist), gave rise to the constitution of the American Fourier Society with its network of communities or phalansteries (in English phalanx or phalanges). The following are worth mentioning (following the order of Noyes and Nordhoff): Trumbull phalanx, Ohio phalanx, Clermont phalanx, Integral phalanx, Alphadelphia phalanx, Clarkson phalanx, Sodus Bay phalanx, Grange phalanx, Wisconsin phalanx, North American phalanx, etc. Even smaller, independent experiments, such as Spring Farm Colony (in Wisconsin, 1846-1848).

- *Fabians:* In the case of the United States, this was initiated via Christian socialism, more specifically, by agents such as Rev. W.D. Porter Bliss in the 1890s, who carried out some attempt at communal experience. Subsequently, its development was limited to the academic and administrative sphere, with the formation of the American Fabian Movement, as well as the multiplicity of Fabian Societies and University Labor Clubs in universities (for example, the Harvard Fabian Society with members such as Stuart Chase, who helped design the New Deal).

c. Mixed

Those experiences that intermingle ideologies are considered (such as Georgism, see below), that include the spiritualist and free love movements, such as the Nashoba communes (in Tennessee, 1825-1828, led by F. Wright), Free Lovers at

Davis House (in Ohio, 1854-58, led by F. Barry), etc. Even *sui generis* cases, such as the Sylvania Association, Yellow Springs Community, Seven Epitaphs, Marlboro Association, Northampton Association, etc. It is worth mentioning the openly declared case of libertarian socialism, the case of the New Philadelphia Colony (in Pennsylvania, 1832-1833, led by B. Müller). Also curious are the Grangers or local corporations of small rural landowners and Masons; even the cases of vegetarian living communities, such as Octagon City (Kansas) or Shalam Colony (New Mexico).

Discussion and conclusions

Regarding the starting hypothesis, it is confirmed that the U.S. macroeconomic model in terms of its growth and development, has not been uniform, nor linear, nor constant, but rich and plural, coexisting throughout the 19th century with mercantilist reminiscences, with a commercial capitalism (where the experiences studied are framed) and another incipient industrial one (taking off thanks to the surplus of the cases treated). It is also noted that there were anarcho-capitalist experiences in the colonization of the American West (in the form of community societies, cooperatives and mutual societies, some of which were later reconverted into economy of scale corporations). There were a variety of cases in the form of private enterprises to promote community farms and/or workshops, thus supplying the frontier with food and utensils, and helping to connect and integrate the country. Thus, it was not the state or its technologies that determined the change (or at least, they were driven by civil society, from religious movements to big businessmen like Edison, Tesla or Westinghouse). It turns out that the State was challenged with the Civil War and technologies were left in the hands of private companies and/or foreign capital. The religious factor (*lato sensu*, including ideologies) was more relevant, mobilizing multitudes and favoring the constitution of communities throughout the West.

Among the systematized colonizing enterprises, the following comparison can be made between groups of communities (resolving the

colonizing paradox): the most costly experiences (in price, opportunity, losses or sunk cost, etc.) and the first to disappear, despite being the most recent to be established (they arose in the 1840s and mostly disappeared before the Civil War), were the ideological enterprises (above all, those of utopian socialism). The shortest and of limited cost (losing the donations of their benefactors), were the intellectual communes (of Fabian socialist style), which did not exceed forty-eight months, affecting less than fifty people in total. These cases had in common the ideological factor, giving rise to a worse adaptation to the events, due to their centralized and coercive direction (tending to formalisms and bureaucracy little operative), and due to their lack of incentives for productivity and profitability (without freedom, property or particular initiative).

Consequently, Mises' theorem on the impossibility of socialism (especially since its reinterpretation by Hoppe and Huerta de Soto, as centrally planned and coercive interventionism, discouraging private initiative) is fulfilled, together with the complementary theorems of Buchanan-Tullock (on clientelistic networks, rent-seeking, omnibus decisions, etc.). This explains the greater inefficiency and unsustainability of ideological utopias as opposed to religious ones: while the ideological ones disappeared in a short time and with high indebtedness, some of the confessional ones were able to evolve spontaneously (Hayek), giving way to corporations in force to this day, such as companies of Amanite, Mormon, etc., origin. The latter projects were maintained for a longer period of time thanks to the compensatory mechanisms of social evangelism and the social bonus (productive efforts that were not economically rewarded were so via social recognition and sanctification for eternal life).

As a way to compare, among all the experiences, it has already been said that the traditional religious ones (the dissident and perfectionist sects), were the most productive, among other things because of their positive and redemptive vision of work and business (even reviving the entrepreneurial function, as in the cases of the Rappitas and Amanitas). Unlike the rest of the American farmers who were satisfied with

a production of autarchy (reproducing more or less their resources), on the other hand, the sects mentioned tended to growth and diversification (the farm was followed by sawmills, mills, looms, dyeing, carpentry, ovens, printing, etc.), besides taking care of savings, so they could face greater investments, multiplying their capital (until producing compound capital). The problem arouses with the adaptation to industrial capitalism (with its mass production and economy of scale) and the obstacles of the federal nation-state (which did not want alternative models that violated its dominant standardization). Therefore, there have been utopias in the USA (even in anarcho-capitalist form), but these have become marginal and marginalized since the 20th century, with the strengthening of the State and its welfare economy (expropriating solidarity and charity, converting them into public goods charged to budgets).

In the foundational evolution of the United States (taking into account the multi-relationship between economy, law, politics and religion), it can be telegraphically concluded that the 17th century was the century of mercantilism sponsored by royal houses (openly in the Southern Plantations and covertly in the travel servitude contracts in New England). The 18th century was the beginning of commercial capitalism, especially towards the interior of the continent, but it was also convulsive, because there were many wars (for example, the Indian Wars, the War of Independence). In the 19th century, commercial capitalism emerged, especially in the colonization of the West, thanks to private colonial companies (being the true origin of cooperativism and generalized mutualism). Meanwhile, on the Atlantic coast and nearby, there was tension between the emerging Nordic industrial model and the mercantilist vestige of the South, which ended in the Civil War and in the imposition of the model of the winning side over the defeated (but not because of economic superiority, since the raw materials of the South had risen in price due to the industrialization demand of Europe).

Focusing attention on what has been presented in this study on the American experiments of the 19th century, it is possible to diagnose the causes of their extinction by the concurrence of

a variety of circumstances and assumptions: a) the conduction of their objective, i.e., to help colonize the West and integrate the country; b) the conduction of the theorem of the impossibility of socialism (so those communities that remained more centralized and coercive, without due respect for property and private initiative, being the first to become extinct and the most costly); c) the pressures of the standardizing model of the federal nation-state (which did not want alternative models, so it marginalized them, until their extinction and reconversion of their settlements into part of the state cultural heritage); d) the effects of the second industrial and technological revolution, which gave way to industrial capitalism (thus overcoming commercial capitalism, in which these communities – excepting the amanitas and their Whirlpool, for example - stood out).

As future lines of research, the life of the communities presented and their comparative conception and conduction of cost, usefulness and efficiency should be studied in depth.

Acknowledgments

References

Acemoglu, D. y Robinson, J. (2012). *Why nations fail.* Crown Publishers.

Acemoglu, D. and Robinson, J. (2019). *The narrow corridor*. Penguin Press.

Alcorn, S. and Solarz, B. (2006). The autistic economist. *Post-Autistic Economics Review, 38,* 13-19.

Anderson, T. and Hill, P. (1979). An American Experiment in Anarcho-Capitalism: The not so wild, Wild West. *Journal of Libertarian Studies*, *3*(1), 9-29.

Anderson, T. and Hill, P. (2004). *The Not So Wild, Wild West: Property Rights on the Frontier*. Stanford University Press.

Baltzell, E. (1962). *An American Business Aristocracy.* Collier Books.

Baltzell, E. (1964). *The Protestant Establishment. Aristocracy & Caste in America.* Random House.

Barro, R. and McCleary, R. (2003). Religion and Economic Growth across Countries. *American Sociological Review, 68*(5), 760-781. https://doi.org/10.2307/1519761

Barro, R. and McCleary, R. (2006). Religion and Economy. *Journal of Economic Perspectives, 20*(2), 49-72. https://doi.org/10.1257/jep.20.2.49

Beard, C. (1913). *An Economic Interpretation of the Constitution of the United States.* Macmillan.

Beard, C. and Beard, M. (1921). *History of the United States* (2 vols.). Macmillan

Berry, B. (1992) *America's utopian experiments: communal havens from long-wave crises.* Dartmouth College.

Bestor, A. (1950). *Backwoods utopias; the sectarian and Owenite phases of communitarian socialism in America, 1663-1829.* University of Pennsylvania Press.

Block, J., Fisch, C. and Rehan, F. (2020). Religion and entrepreneurship: a map of the field and bibliometric analysis. *Management Review Quaterly, 70*, 591-627. https://doi.org/10.1007/s11301-019-00177-2

Boettke, P. (2005). Religion and Economics. *Faith and Economics, 46*, 14-18. https://bit.ly/3cY9Am6

Boettke, P., Haeffele-Balch, S. and Storr, V. (2016). *Mainline Economics*. Mercatus Center-George Mason University.

Brennan, G. and Buchanan, J. (1985). *The reason of rules. Constitutional Political Economy.* Cambridge University Press

Buchanan, J. (1987). *Constitutional Economics*. MacMillan.

Buchanan, J. (1990). The Domain of Constitutional Economics. *Constitutional Political Economy*, *1*(1), 1-18.

Buchanan, J. and Tullock, G. (1962). *The Calculus of Consent: Logical Foundations of Constitutional Democracy.* The University of Michigan Press.

Coase, R. (1937). The nature of the firm. *Economica, 4*(16), 386-405. https://doi.org/10.1111/j.1468-0335.1937.tb00002.x

Coase, R. (1960). The problem of social cost. *Journal of Law and Economics, 3*(1), 1-44. https://bit.ly/3Q5mtJZ

Cohen, D. (1973). *Not of the world; a history of the commune in America*. Follett.

Cox, O. (1964). *Capitalism as a system.* Monthly Review Press.

Curl, J. (2012). *For All the People: Uncovering the Hidden History of Cooperation, Cooperative Movements, and Communalism in America.* PM Press.

Escohotado, A. (2008-2016). *Los enemigos del comercio. Una historia moral de la propiedad.* Espasa.

Feyerabend, P. (1975). *Against Method: Outline of an Anarchistic Theory of Knowledge.* Verso.

Fogel, R. (1964). *Railroads and American Economic Growth.* Johns Hopkins Press.

Fogel, R. (2000). *The Fourth Great Awakening and the Future of Egalitarism.* University of Chicago Press.

Fogel, R. and Engerman, S. L. (1974). *Time on the cross* (2 vols.). Little, Brown and Co.

Fogarty, R. (1972). *American utopias*. Peacock Publishers.

Fogarty, R. (1980). *Dictionary of American communal and utopian history*. Greenwood Press.

Fogarty, R. (1990). *All things new: American communes and utopian movements, 1860-1914.* University of Chicago Press.

Friesen, J. and Friesen, V. (2004). *The Palgrave Companion to North American Utopias.* Palgrave Macmillan.

Galbraith, J. K. (1958). *The Affluent Society.* Houghton Mifflin.

Gairdner, B. and Kraushaar, O. (1980) *Utopias, the American experience*. Scarecrow Press.

Gerschenkron, A. (1962). *Economic backwardness in historical perspective.* Harvard University Press.

Hartwell, R. (1971). *The Industrial Revolution and Economic Growth.* Routledge.

Hartwell, R., James, J. and Thomas, M. (1994). *Capitalism in context*. University of Chicago Press.

Hayek, F. (1944). *The Road to Serfdom.* George Routledge & Sons.

Hayek, F. (1946). *Individualism and Economic Order*. Princeton University.

Hayek, F. (1952a) *The sensory order.* University of Chicago.

Hayek, F. (1952b) *The counter-revolution of science: Studies on the Abuse of Reason.* Free Press.

Hayek, F. (1960). *The Constitution of Liberty*. The University of Chicago Press.

Hayek, F. (1973). *Law, Legislation, and Liberty.* The University of Chicago Press.

Hayek, F. (1988). *The fatal conceit: the errors of socialism.* The University of Chicago Press.

Hillquit, M. (1903). *History of Socialism in the United States.* Funk & Wagnalls Co.

Hinds, W. (1878). *American Communities.* Charles H. Kerr & Co.

Hinds, W. (1908). *American Communities and Co-operative colonies.* Charles H. Kerr & Co.

Hirschman, A. (1970). *Exit, voice, and loyalty: Responses to decline in firms, organizations, and States.* Harvard University Press.

Hirschman, A. (1993). Exit, voice, and the fate of the German Democratic Republic: An Essay in Conceptual History. *World Politics*, *45*(2), 173-202. https://doi.org/10.2307/2950657

Hofstadter, R. and Olson, K. (1986). *Reseña de la Historia de los Estados Unidos* (trad.). Agency of International Communication.

Hoppe, H. (1989). *A theory of socialism and capitalism.* Kluwer.

Hoppe, H. (1993). *The Economics and Ethics of Private Property* (reprint. 2006). Ludwig von Mises Institute.

Hoppe, H. (1995). *Economic science and the Austrian method.* Mises Institute.

Huerta de Soto, J. (1992). *Socialismo, cálculo económico y función empresarial.* Unión Editorial.

Huerta de Soto, J. (2000). *La escuela austriaca: mercado y creatividad empresarial.* Ed. Síntesis.

Hunt, D. (1989). *Economic theories of development: an analysis of competing paradigms.* Harvester Wheatsheaf.

Iannaccone, L. (1998). Introduction to the Economics of Religion. *Journal of Economic Literature, 36*(3),1465-1495. https://bit.ly/3SrCZ8B

Keen, S. (2011). *Debunking Economics*. ZED Books.

Kephart, W. M. (1998). *Extraordinary groups: an examination of unconventional lifestyles*. St. Martin's Press.

Lipset, S. (1996). *American excepcionalism.* W.W. Norton

Madison, C. (1945). Anarchism in the United States. *Journal of the History of Ideas, 6*(1),46-66. https://doi.org/10.2307/2707055

Mazzucato, M. (2013). *The entrepreneurial state: debunking public vs. private myths in risk and innovation.* Anthem Press.

Martin, J. (1953). *Men against the State. The Expositors of Individualist Anarchism in America, 1827-1908*. Adrian Allen Associates.

Marx, K. y Engels, F. (1848). *Manifesto of the Communist Party*. Moore.

Mead, F. (1975). *Handbook of Denominations in the United State*s. Abingdon Press.

Melton, J. (1989). *The Encyclopedia of American Religions*. Gale Research Inc.

Menéndez, A. (1976). *Church-State Relations: an annotated bibliography*. Garland.

Menger, C. (1871). *Grundsätze der Volkswirtschaftslehre.* Braumüller.

Menger, C. (1883). *Untersuchungen uber die Methode der Socialwissenschaften und der Politischen Oekonomie Insbesondere*. Duncker & Humblot.

Mises, L. (1922) *Die Gemeinwirtschaft: Untersuchungen über den Sozialismus.* Gustav Fischer Verlag.

Mises, L. (1929). *Kritik des Interventionismus*. Gustav Fischer Verlag.

Mises, L. (1933). *Grundprobleme der Nationalökonomie: Untersuchungen über Verfahren, Aufgaben und*

Inhalt der Wirtschafts- und Gesellschaftslehre. Gustav Fischer Verlag.

Mises, L. (1944). *Omnipotent Government: The Rise of the Total State and Total War.* Yale University Press.

Mises, L. (1949). *Human Action: A Treatise on Economics.* Yale University Press.

Mises, L. (1956). *The Anti-Capitalistic Mentality.* Van Nostrand.

Mises, L. (1957). *Theory and History: An Interpretation of Social and Economic Evolution.* Yale University Press.

Noonan, J. and Gafney, E. (2001). *Religious Freedom. History, cases, and other materials on the interaction of religion and Government.* Foundation Press.

Nordhoff, C. (1875). *The communistic societies of the United States.* Dover Publications.

Noyes, J. (1870). *History of American Socialism.* Wallingford Community.

Olson, L. and Djupe, P. (2003). *Encyclopedia of American religion and politics.* Fact on File.

Queen, E., Stephen, R., Prothero Jr. S., Gardiner, H. and Martin E., M. (1996). *The encyclopedia of American Religious History* (2vols.). Facts of File.

Rothbard, M. (1962). *Man, Economy, and State: A treatise on economic principles.* Van Nostrand.

Rothbard, M. (1973). *For a New Liberty: The Libertarian Manifesto.* Macmillan.

Rothbard, M. (1975-79). *Conceived in Liberty* (4 vols.). Arlington House Publishers.

Rothbard, M. (1995). *An Austrian Perspective on the History of Economic Thought.* Edward Elgar Publishing.

Romer, P. (2015). Mathiness in the theory of economic growth. *American Economic Review, 105*(5), 89-93. https://doi.org/10.1257/aer.p20151066

Rostow, W. W. (1959). The Stages of Economic Growth. *Economic History Review, 12*(1), 1-16. https://doi.org/10.1111/j.1468-0289.1959.tb01829.x

Rostow, W. W. (1960). *The Stages of Economic Growth.* Cambridge University Press.

Rostow, W. W. (1961). *Politics and the Stages of Growth.* Cambridge University Press.

Sánchez-Bayón, A. (2014). Freedom of religion at large in American Common Law: a critical review and new topics, *Journal for the Study of Religions and Ideologies, 13*(37), 35-72. https://bit.ly/3dd7wah

Sánchez-Bayón, A. (2018). Estudio de la idiosincrasia estadounidense desde su Teología política y Ciencias Eclesiásticas, *Estudios Eclesiásticos, 93*(364), 165-204. https://bit.ly/3cYpKMk

Sánchez-Bayón, A. (2020). Renewal of business & economic thought after the globalization. *Bajo Palabra, 24,* 293-318. https://doi.org/10.15366/bp.2020.24.015

Stokes, A (1950). *Church and State in the United States* (3 vols.). Harper & Bro.

Smith, A. (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations.* Strahan & Cadell.

Smith, J. and Jamison, A. (1961). *Religion in American Life* (4 vols.). Princeton University Press.

Stokes, A. (1950). *Church and State in the United States* (3 vols.). Harper & Bro.

Tullock, G. (1972) *Explorations in the Theory of Anarchy.* Center for the Study of Public Choice.

Tullock, G. (1974). *Further Explorations in the Theory of Anarchy.* Center for the Study of Public Choice.

Tyler, A. F. (1944). *Freedom´s ferment. Phases of American Social History to 1860.* The University of Minnesota Press.

Veysey, L. (1973). *The communal experience; anarchist and mystical counter-cultures in America.* Harper & Row.

Weber, M. (1905). *Die protestantische Ethik und der Geist des Kapitalismus.* Mohr.

Wood, J., Thompson, E. and Miller, R. (1958). *Church and State in Scripture History and Constitutional Law.* Baylor University Press.

Wooster, E. (1924). *Communities of the Past and Present.* Llano Colonist.

Design and validation of sustainability scales in business entrepreneurship

Methodology
It is an instrumental type of study, in the sense that the psychometric properties of the proposed instrument are analyzed with a cross-sectional design.

Result or conclusion 1
It was found that the factorial structure is represented by a single factor, as eigen values greater than unity were observed, determining the single factor model.

Objective
The objective is to design and validate the durability scale of business entrepreneurship in entrepreneurs of the Gamarra Commercial Emporium, located in Lima, Peru, being this one of the main commercial emporiums that houses a diversity of entrepreneurs in the country.

Results or conclusion 2
The study enabled to design and validate a sustainability scale of business entrepreneurship in entrepreneurs (EPEE) by obtaining adequate goodness-of-fit indicators for model 4 with 15 items.

Introduction
No instruments have been developed to measure the sustainability of entrepreneurship.

Result or conclusion 3
Model 4 with 15 items is the most appropriate for measuring entrepreneurship sustainability, so the scale can be used to measure endurance in Micro, Small and Medium Enterprises.

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Design and validation of sustainability scales in business entrepreneurship

Diseño y validación de escalas de perdurabilidad en emprendimiento empresarial

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Abstract: new ventures appear in many forms, however, enduring over time is a challenge, due to the various factors involved in their survival. Therefore, the aim of the study is to design and validate an entrepreneurship durability scale (EPEE). The research is instrumental, for these 20 items were elaborated under the literature review, and the items were verified by judges and pilot testing. The instrument was applied to 400 entrepreneurs. After the quality control of the data, descriptive and reliability statistics were obtained to carry out the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The results revealed adequate reliability levels (α=.989; ω=0.99) of the 20 items; furthermore, the AFE reported that all 20 items load on a single factor (λ>0.8), a very good KMO and a significant Bartlett $(KMO = 0.97; \chi^2 = 4674; df = 190; p < .001)$ with an explained variance of 82.5 %. In contrast, the CFA reported 4 models, where model 4 (M4) with 15 items has adequate goodness-of-fit indices $(CMIN/DF = 2.24; CFI = 0.92; TLI = 0.91; RMSEA = 0.07)$ confirming the factor structure of the single-factor model. In conclusion, as it has adequate goodness-of-fit indices, the M4 is the most appropriate for measuring the durability of entrepreneurship in entrepreneurs.

Keywords: exploratory factor analysis, one-factor model, entrepreneurship, business perdurability, financial support, liquidity, innovation, confirmatory factor analysis.

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Resumen: los nuevos emprendimientos se presentan de muchas formas, sin embargo, perdurar en el tiempo es un desafío, debido a los diversos factores que intervienen en su subsistencia. Por lo tanto, el objetivo del estudio es diseñar y validar una escala de perdurabilidad del emprendimiento empresarial (EPEE). La investigación está bajo el soporte metodológico de un estudio de tipo instrumental, para esto se elaboraron 20 ítems bajo la revisión de la literatura, se verificó los ítems por medio de jueces y prueba piloto. El instrumento se aplicó a 400 emprendedores. Luego, a partir del control de calidad de los datos se obtuvo estadísticas descriptivas y de fiabilidad para realizar el análisis factorial exploratorio (AFE) y el análisis factorial confirmatorio (AFC). Los resultados revelaron adecuados niveles de fiabilidad (α=.989; ω=0.99) de los 20 ítems; además, el AFE reportó que los 20 ítems cargan en un solo factor (λ>0.8), un KMO muy bueno y un Bartlett significativo $(KMO = 0.97; \chi^2 = 4674; df = 190; p < .001)$ con una varianza explicada del 82,5 %; en cambio, el AFC reportó 4 modelos, donde el modelo 4 (M4) con 15 ítems tiene adecuados índices de bondad de ajuste $(CMIN/DF = 2.24; CFI = 0.92; TLI = 0.91; RMSEA = 0.07)$ que confirman la estructura factorial del modelo unifactorial. En conclusión, al contar con adecuados índices de bondad de ajuste, el M4 es el más apropiado para medir la perdurabilidad del emprendimiento empresarial en emprendedores.

Palabras clave: análisis factorial exploratorio, modelo unifactorial, emprendimiento, perdurabilidad empresarial, apoyo económico, liquidez, innovación, análisis factorial confirmatorio.

Introduction

An entrepreneur is the person who distinguishes opportunities, generates novel ideas, shapes them into innovative products or services and commercializes them in the market (Acuña, 2021). The entrepreneur's orientation creates an image for the social and economic growth of their locality, region or country (Silveira-Pérez *et al.*, 2016), however, he/she struggles to maintain the entrepreneurship in the market based on competitiveness, innovation and adapting to the increasingly competitive and globalized market.

Knowledge, skills, abilities, and attitudes are essential elements in entrepreneurs, which attract the attention of researchers and academics, which over time become work agendas and public policies, both in consolidated and emerging economies (Machmud and Sidharta, 2016). Thus, knowledge seems to be the differentiating element available to countries to preserve a competitive advantage and a fundamental piece to increase profitability at the business level (Lupiáñez *et al.*, 2017). Hence, the interest of knowing the factors that influence entrepreneurship, to establish strategies with emphasis on innovations, human capital, organizational development, among others (Méndez-Picazo *et al.*, 2021).

The theoretical literature reveals three needs that predominate in the motivation of entrepreneurs: the need for achievement, affiliation, and power, all related to the individual's desire to succeed and grow (Molina *et al.*, 2016). López *et al.* (2019) point out that managerial skills, composed of knowledge and capabilities are important for the development, improvement of productivity and durability of the company over time. Thus, the initiative of starting a business expects to achieve benefits that make it possible to maintain operations in the first instance and achieve economic stability (Texis *et al.*, 2016), which implies its durability over time, achieving a maturity level in strategies and operational processes (Daza, 2016). As a result of its contributions to job creation, innovation, product diversity and social movement, entrepreneurship is a driving force for economic growth and development (Soria-Barreto *et al.*, 2021).

In recent years, increasingly ingenious entrepreneurial initiatives have emerged in Peru, many of these people with basic training and others with studies that are not necessarily related to business, but with the daily effort they have managed to position themselves in the market (Avalo *et al.*, 2016). In addition, entrepreneurship had an impact on Peruvian economic growth, causing the development and increase of companies from 1 % equivalent to 0.68 % in GDP (Gross Domestic Product) per capita (León-Mendoza, 2019). However, many of the companies take several years to find stability in the business market, so it is necessary to identify the factors or aspects involved in their stability.

Entrepreneurship studies reveal instruments from the business and academic perspective (Helm and Andersson, 2010; Hornsby *et al.*, 2002; Saptono *et al.*, 2018; Schjoedt and Shaver, 2012; Sharifi-Tehrani *et al.,* 2022; Vendrig *et al.*, 2021).

However, no instruments have been developed yet to measure the durability of ventures over time. Therefore, this research aims to design and validate the sustainability scale of business entrepreneurship in entrepreneurs of the Gamarra Commercial Emporium, located in Lima, Peru, being one of the main commercial emporiums that houses a diversity of entrepreneurs in the country.

Perdurability of the business venture

Entrepreneurship is the attitude and aptitude that a person has to undertake an idea based on opportunities, which is key to generate employment (García-Hernández *et al.*, 2020), innovation, productivity, thus economic growth (Flores *et al.*, 2017). It is a term used in business due to the creation of new ventures, based on products or services, some more innovative than others (García-Pérez de Lema *et al.*, 2016); however, for this venture to last, it depends on several factors such as liquidity and profitability. Therefore, durability is considered to be the ability of companies to last or maintain a high life rate with respect to the start-up, taking into account the various changes of the market and technological advances, i.e.; the company must have the ability to adapt to the abrupt changes that it may have in its environment, so that they can manage the venture without having negative results, transforming those disadvantages into representative solutions, which contribute to the improvement and thus durability (Castillo, 2018).

According to De la Garza *et al.* (2017), entrepreneurship is the process of creating a product or service with an added value through effort that makes it sustainable over time. Resource mobilization is an essential part to ensure the success of entrepreneurship, hence the importance to stimulate economic growth by privileging factors such as innovation, human capital, process improvement, business development and feedback for continuous improvement (Méndez-Picazo *et al.*, 2021). Similarly, there are studies that state the influence of personality in the development of entrepreneurship (Fernández-Pérez *et al.*, 2019), which has a synergistic and socializing effect among members (Korpysa, 2020).

Entrepreneurship also has a social meaning (Sánchez *et al.*, 2018), since it is a type of entrepreneurship that seeks to provide services or goods to the unmet needs of society, putting social value above personal expectations. Guerrero *et al.* (2020) point out that entrepreneurship initiatives contribute to the generation of employment and strengthen the country's economy. On the other hand, it contributes to teaching how to manage a business through critical thinking and the development of self-esteem (Martínez-Gregorio *et al.*, 2021). Likewise, there are some countries that encourage social entrepreneurship through proposals developed by university students with the aim of solving a problem in their community with a creative solution (Möller-Recondo and D'Amato, 2020).

There are factors involved with entrepreneurship that determine durability over time. One of these factors is the financing or equity capital that the entrepreneur may have to meet its obligations, being that the optimal results in debt levels are more evident in diversified companies than in focused companies, since their debt capacity allows them to be closer to these levels (Ahuja and Novelli, 2017). Another factor to consider is human capital, being of the most important to the venture; however, this capital is difficult to quantify, since there are several factors that affect the quantity and quality of human capital, such as education, which leads to specialization, the employment and unemployment rate, and the quantity and quality of hours worked (Erken *et al.*, 2018).

There are factors related to public policies and the environment. The public policy factor is related to cultural values and entrepreneurial activity, in addition to the economic level of the country, and these are determining when explaining entrepreneurial activity (De la Garza *et al.*, 2017); likewise, the environment in which an entrepreneurship is developed along with current legislation, sources of financing, qualification opportunities, among others, directly influence the process. However, it is in the environment where the needs and potential opportunities for entrepreneurship are identified (Prada-Villamizar and Sánchez-Peinado, 2021), i.e., the need is focused on the desire to generate income in a scenario of scarce employment, and the opportunity are the motivations they have to contribute

to society or to carry out an entrepreneurial idea. In either scenario, a deep and favorable relationship with the environment is needed.

One of the great challenges of entrepreneurship is that the venture lasts over time, and this depends on the factors mentioned above and others that originate during its development. However, sustainability is an important factor for entrepreneurship. This concept was valued from its beginnings with the industrial revolution to the company we know today (Almaraz, 2020). In the effort to make a company, through trial-error-trial, knowledge is obtained, skills and abilities are perfected, involving organizational learning to ensure the durability of the venture (Castillo, 2018). Factors that could intervene in the durability of ventures over time are the information and communication technologies (ICT), due to the vast existing information on any venture idea, as well as the constant innovation and adaptation by competing companies (Fang *et al.*, 2022). The latter is a key element in business sustainability, since competition among companies forces them to adapt to changes quickly and efficiently. Thus, a competitive business environment generates competitive advantages, sensitizes the reflexive behaviors of managers to seek immediate responses in the face of adversity to ensure their survival for long periods (Castillo, 2018).

An enduring enterprise is the term used when it is consolidated, i.e., it is solvent and can meet its business obligations. A consolidated company maximizes its profits and benefits (Yamada *et al.*, 2020), in addition, it has a good and important financial management to acquire new machinery and equipment, purchase inputs in a timely way

and pay decent salaries to its employees. This involves taking care of financial resources, rationing and prioritizing its expenses (Sánchez *et al.*, 2018). The search for differentiation in the market guarantees the continuity of the business, and depends on the proper management of knowledge, skills, autonomy, evaluation of the environment and management of the organizational life cycle (De la Garza *et al.*, 2017), in addition to the efficient use of resources, which are essential for any enterprise. The latter allows achieving the company's objectives supported in business management, favored at the time of making an efficiency analysis that helps to make the right decisions, since it allows evaluating the company's performance (Alberca and Parte, 2013).

However, sixteen studies were found that measure entrepreneurship from different perspectives in bibliographic databases such as Scopus and Web of science on the proposals related to instruments or scales for measuring entrepreneurship; however, in the analysis of the instruments and their dimensions or factors, no study was found that involves the sustainability of entrepreneurship, but there are some factors that are directly related to the sustainability of an entrepreneurship, such as the factors proposed by Hornsby *et al.* (2002), Helm and Andersson (2010), Nájera *et al.* (2018), Kannampuzha and Hockerts (2019) and the factors presented by Vendrig *et al.* (2021). However, the durability of entrepreneurship is still not very clear, so it is worth filling the gap of theoretical knowledge under the initial proposal of an instrument that measures the durability of entrepreneurship from the perspective of consolidated business ventures.

Table 1
Evolution of proposed instruments on entrepreneurship

Author and year	Factors/dimensions	Name of instrument and/or model
Hornsby *et al.* (2002)	Appropriate use of rewards, gaining top management support, availability of resources, supportive organizational structure, risk-taking, and tolerance for failure.	Corporate Entrepreneurship Assessment Instrument (CEAI)
Helm and Andersson (2010)	Innovation, proactivity and risk-taking.	Nonprofit Social Entrepreneurship Instrument
Schjoedt and Shaver (2012)	Locus of control with three items (unifactor).	Locus of control scale for nascent entrepreneurs

Author and year	Factors/dimensions	Name of instrument and/or model
de Souza *et al.* (2013)	Prospecting and innovation and management and persistence.	Instrumento de escala para medir la actitud empresarial (IMAE)
Carraher (2013)	Social entrepreneurship with 11 items (unifactor).	Social entrepreneurship scale
Davari and Rezazadeh (2015)	Before alliance formation, after alliance formation, and alliance performance.	Entrepreneurship of alliances
Saptono *et al.* (2018)	Dimensions of the entrepreneurial attitude indicators: business opportunities, business risks and innovation. Value dimensions of the entrepreneurship indicator: look confident.	Affective Domain Assessment Instrument for Entrepreneurship
Nájera *et al.* (2018)	Operational processes, entrepreneurial profile, support processes, public policies, mentoring, leadership, future orientation, task and results orientation.	Entrepreneurship model for PYMES
Steyn and de Bruin (2018)	Management support, job discretion/ autonomy, rewards/reinforcement, time availability, organizational boundaries.	Instrumento Breve de Evaluación del Espíritu Empresarial (BCEAI)
Daud *et al.* (2019)	It contains two dimensions: perseverance and social and cultural awareness.	Rasgo de emprendimiento "ET"
Kannampuzha and Hockerts (2019)	Making change, social mission, earned income, paid employees, democratic decision making, stakeholder involvement, social impact.	Organizational social entrepreneurship
García-González *et al.* (2020)	Personal subcompetencies, leadership subcompetencies, social innovation subcompetencies, social value subcompetencies, entrepreneurial management subcompetencies.	Competence of social entrepreneurship
Capella-Peris *et al.* (2020)	Personal characteristics, social characteristics, innovative characteristics.	Social Entrepreneurship Competency in Higher Education (SECS)
Vendrig *et al.* (2021)	Entrepreneurial attitude, management skills, entrepreneurial resilience and financial health.	Work and Well-Being Inventory (WBI)
Sharifi-Tehrani *et al.* (2022)	Emotional and practical responses, recognition of the capabilities of marginalized people, understanding of marginalized people, awareness of social discriminations, narcissism.	Tourism Social Entrepreneurial Scale of Ethnocultural Empathy (abbreviated as TSE-SEE)
Martínez-Gregorio and Oliver (2022)	Attitude toward entrepreneurship, subjective norm, entrepreneurial self-efficacy, entrepreneurial intention.	Entrepreneurial Intention Questionnaire (EIQ)

Materials and Method

Type and design of research

This study is instrumental, in the sense that the psychometric properties of the proposed instrument are analyzed, with a cross-sectional design (Ato *et al.*, 2013).

Participants

Since this was an instrumental study with a structural analysis, an *a priori* sample was calculated for structural equation models, so the necessary parameters were considered. This determined a median anticipated effect size equal to 0.30, a statistical power level of 0.95 with 2 latent variables, 20 observable variables and a probability of 0.05, and 147 participants as the minimum sample to detect the effect. Consequently, a non-probabilistic sampling was considered, surveying 400 entrepreneurs of Micro, Small and Medium Enterprises of the Gamarra Commercial Emporium located in Lima, Peru, where the instrument was applied in different types of enterprises (clothing, food, household appliances, etc.) with an age older than ten years.

Table 2 shows the characteristics of the entrepreneurs who participated in the study. Of the 100 % of the respondents, 63.2 % are women entrepreneurs and 36.8 % are men entrepreneurs, of whom 46.8 % are between 26 and 35 years old, with a representative secondary education equi-valent to 44.8 % and who mostly live in Central Lima (35.5 %). In addition, 59.25 % are businesses that have less than five years of constituted and most of these businesses tend to have between five and ten employees.

Table 2
Characteristics of participants (n=400)

Sociodemographic variable	Categories	Participants	% of participants
Genre	Female	253	63.2
	Male	147	36.8
Age	18-25	86	21.5
	26-35	187	46.8
	36-50	105	26.3
	51 to more	22	5.5
Academic background	Primary education	28	7.0
	Secondary education	179	44.75
	Baccalaureate	140	35
	Magister	36	9
	PhD	7	1.75
	None of the above	10	2.5
Residence	North Lima	84	21
	South Lima	59	14.75
	East Lima	97	24.25
	Lima Downtown	142	35.5
	Modern Lima	16	4
	Callao	2	0.5
Years of the company	Less than 1 year	64	16
	From 1 to 5 years old	173	43.25
	From 5 to 10 years old	135	33.75
	More than 10 years	28	7
Number of employees of the company	Less than 5	84	21
	From 5 to 10	180	45
	From 11 to 20	116	29
	More than 31 years	20	5

Instrument

The instrument called the Entrepreneurship Sustainability Scale (EPEE) was developed considering the scientific literature that reflects sustainability of companies over time, where it was found that sustainability in a company depends on liquidity (Quiñones *et al.,* 2014), profitability, innovation, analysis of the environment and markets, strengthening of entrepreneurship in the market, and employee commitment (Cerón and Torres, 2017; Meneses and Gómez, 2014; Pulgarin-Molina and Rivera-Rodriguez, 2007; Restrepo *et al.*, 2009; Rivera *et al.*, 2006; Vélez *et al.*, 2005), which are linked to business entrepreneurship. The latter is composed of a series of indicators such as: entrepreneurial attitude, entrepreneurship training, motivation, access to bank credit, public or private financial support, policies and laws for business creation, business strengthening, the business-environment relationship, and family and friendship networks (Murray and Stern, 2015). As a result of this set of factors and indicators, in addition to those already presented in Table 1, 20 observable variables (items) were elaborated with a measurement scale of five responses, totally disagree (TD; 1) to totally agree (TA; 5) (see Table 3).

Procedure and data analysis

An exhaustive search for scientific information was carried out in a bibliographic database, which allowed the development of the instrument, giving way to the review and evaluation by judges who provided their observations and suggestions. Then, the instrument was tested in a pilot sample, where it was possible to verify a reliability analysis of general alpha above 0.8 (Cronbach, 1951), which allowed applying the instrument according to the recommended sample from the *a priori* effect size. In this application phase of the instrument, working groups were organized to cover the different galleries of the Gamarra Commercial Emporium; it is worth mentioning that a certain reluctant attitude to collaborate was evidenced in the entrepreneurs, for the same reason, it was a great challenge to cover a sample of 400 respondents required. In addition, all respondents in this process were also informed of the purpose of the study, where it was emphasized that their participation was voluntary and their anonymity was guaranteed by the researchers. Finally, an option of acceptance or refusal was included in the form to ensure informed consent.

To apply the surveys, we proceeded to the registration in an Excel sheet, where the quality control of the surveys was carried out and the descriptive analysis of the characteristics of the sample collected was performed. The 400 participants were divided into two (n1=147; n2=253) in order to perform the exploratory factor analysis (EFA) in the Jamovi 1.6.23 software and the confirmatory factor analysis (CFA) in the AMOS software, respectively.

The Cronbach's Alpha reliability analysis was explored (Cronbach, 1951) and item discrimination were explored with n1, initially identifying item 6 with a rest item correlation equal to 0.79, but which was not enough evidence to eliminate it completely; the mean, standard deviation and ω McDonald's of each of the items were also identified. This originated a more robust AFE to determine the internal structure of the instrument (Pérez and Medrano, 2010); for this, the Maximum Likelihood extraction method was configured based on an Oblimin rotation and number of factors based on parallel analysis (O'Connor, 2000). In addition, there were comparisons of assumptions in Bartlett's test of sphericity and KMO sampling adequacy mean (KMO>0.6) (Kaiser, 1970, 1974); meanwhile, factor loadings higher than 0.5 were requested and the lower ones were configured as hidden (Escobedo *et al.*, 2016). It is at this point where item 6 is rechecked as the rest of the items and it was observed that the 20 items had $\lambda>0.8$ that represented the factorial structure by a single factor, so that all items contributed to the construct.

Knowing that all the items are adequate and contribute better to the construct, n2=253 was used, executing the CFA (Pérez and Medrano, 2010). After having extracted the data to the aforementioned software and having elaborated the factorial structure, it was proceeded to configure the estimations, ordering the applica-

tion of the Maximum Likelihood extraction method, requesting the adjustment of the saturated and independent model and the estimation of means and intercept. Likewise, outputs were configured, requesting the minimization history, the standardized estimators, the modification indexes, among other parameters necessary to verify and validate the factorial structure of the instrument. It should be noted that the analyzed goodness-of-fit indices focused on the absolute fit (CMIN/DF<3), the comparative fit centered on a CFI>0.90 and TLI>0.90, and the determination of the model based on the RMSEA<0.08 with a confidence interval equal to 90 % (Escobedo *et al.*, 2016), whose parameters allowed identifying four models.

Table 3
Item reliability statistics

Items	Description	M (4.06)	SD (1.21)	IHC	If the element is removed	
					α (0.989)	ω (0.99)
Item 1	I think that having an entrepreneurial attitude is important to start your own business.	4.24	1.39	0.94	0.989	0.989
Item 2	I believe that higher education is adequate to start a business.	4.07	1.31	0.91	0.989	0.989
Item 3	I am happy to start my own business.	4.16	1.34	0.92	0.989	0.989
Item 4	It is key to know the leverage ratio when applying for financing for our venture.	4.11	1.27	0.92	0.989	0.989
Item 5	If I have financial support, I am willing to start my own business.	4.10	1.33	0.92	0.989	0.989
Item 6	I believe that the State promotes business entrepreneurship.	3.84	1.40	0.79	0.990	0.990
Item 7	Starting a business requires rigorous but necessary procedures to achieve formality.	3.95	1.28	0.89	0.989	0.989
Item 8	I have a team capable of achieving the goals and objectives of the venture.	4.01	1.32	0.91	0.989	0.989
Item 9	My family or friends influenced me to become an entrepreneur.	3.97	1.37	0.88	0.989	0.989
Item 10	A company needs to have liquidity to be able to meet its expenses.	4.31	1.29	0.94	0.989	0.989
Item 11	The product or service sold by a company must be profitable in order to last over time.	4.18	1.31	0.92	0.989	0.989
Item 12	My company carries out innovation processes on a continuous basis.	4.20	1.28	0.92	0.989	0.989
Item 13	I need to be informed of everything that is happening around my company in order to make better decisions.	3.99	1.29	0.89	0.989	0.989
Item 14	An employer must have a comprehensive commitment to its employees.	4.03	1.30	0.90	0.989	0.989
Item 15	I think it is important for the company to motivate employees to be part of the company.	4.01	1.31	0.89	0.989	0.989

Items	Description	M (4.06)	SD (1.21)	IHC	If the element is removed	
					α (0.989)	ω (0.99)
Item 16	I believe that the staff contributes to the company's work efficiency.	4.03	1.35	0.90	0.989	0.989
Item 17	I have conducted training for my employees.	3.99	1.32	0.90	0.989	0.989
Item 18	Highly qualified personnel must be available for the management and/or administration position.	3.99	1.34	0.90	0.989	0.989
Item 19	Employees should be encouraged to act ethically and be responsible for their actions.	4.01	1.35	0.91	0.989	0.989
Item 20	The company must have as one of its main objectives to be number one in its sector.	4.09	1.31	0.92	0.989	0.989

Note. M=Mean; SD=standard deviation; IHC=corrected homogeneity index; α= Cronbach's alpha; ω= ω McDonald.

Results

Reliability analysis

Reliability analysis was performed for all the items constructed, where an overall average of 4.06 with a standard deviation of 1.21 was identified. Highlighting an item-rest correlation higher than 0.79 (Zijlmans *et al.*, 2018), it was possible to identify that if the item is eliminated for both α Cronbach's and ω McDonald's it is possible to obtain a reliability of up to 0.99. However, an overall α Cronbach's equal to 0.989 and an ω McDonald's higher than α Cronbach's is reported, which allows determining the reliability of all constructed items, so it is not necessary to eliminate any constructed item; hence, a more robust internal analysis of all items is required (see Table 3).

Results of exploratory factor analysis

An exploratory factor analysis considered more robust was conducted to determine the internal structure of the instrument, where it was identified that all items contribute to the construct, which have factor loadings above 0.80 with communalities ranging between 0.1 and 0.37. Additionally, a very good KMO equal to 0.97 with a significant Bartlett's test of sphericity ($\chi^2=4674$; df=190; p < .001) was found, and a cumulative variance that explains 82.5% of the total test. In addition, it was found that the factorial structure is represented by a single factor, since eigenvalues greater than unity were observed, determining the single-factor model.

Table 4
Exploratory factor analysis (n1= 147)

Ítems	Factor 1	h²	KMO (0.97)	Items	Factor 1	h²	KMO (0.97)
Item 1	0.94	0.11	0.97	Item 11	0.93	0.14	0.98
Item 2	0.91	0.17	0.98	Item 12	0.92	0.15	0.97
Item 3	0.92	0.15	0.96	Item 13	0.89	0.21	0.97

| Ítems | Factor | h² | KMO | Items | Factor | h² | KMO |
	1		(0.97)		1		(0.97)
Item 4	0.93	0.14	0.97	Item 14	0.90	0.18	0.98
Item 5	0.92	0.15	0.98	Item 15	0.90	0.20	0.98
Item 6	0.80	0.37	0.97	Item 16	0.91	0.17	0.96
Item 7	0.89	0.21	0.96	Item 17	0.91	0.18	0.98
Item 8	0.91	0.18	0.98	Item 18	0.91	0.18	0.97
Item 9	0.89	0.22	0.98	Item 19	0.92	0.16	0.98
Item 10	0.95	0.10	0.96	Item 20	0.93	0.14	0.99

Note. The "maximum likelihood" extraction method was determined in combination with an "oblimin" rotation. h2: communalities. KMO: Kaiser-Meyer-Olkin measure of sampling adequacy.

Results of confirmatory factor analysis

Figure 1 shows graphically the results of the CFA with 253 remaining respondents (n_2), where it is observed that the Entrepreneurship Sustainability Scale (EPEE) is represented by a single factor, in which $\lambda > 0.45$ and $\lambda < 0.79$ are observed among the 15 items that contribute significantly to the EPEE factor model. In addition, the standardized regression weights of the items considered in the confirmatory factor model resulted in estimators >0.68 and <0.85 with a $p<0.000$ being significant in all items, i.e., the EPEE factor has a significant effect on all items.

Table 5 shows the goodness-of-fit indices, which show four models with their goodness-of-fit indices extracted. Model 1 (M1) shows the indices of the 20 items without modifications or covariances in the errors, where an absolute fit index was obtained with a CMIN/DF equal to 2.082 less than 3, being an adequate fit index. The comparative fit indices (CFI=0.86 and a TLI=0.84) are below the permitted threshold (CFI>0.90 and a TLI=0.90), with a RMSEA=0.08 being at the limit as recommended by the scientific literature. In view of this, covariances were sought in the errors of items 6-7 and 18-20 in model 2 (M2), resulting in improvements in the absolute fit index but not in the comparative fit nor in the RMSEA. Consequently, one more covariance was added on items 10-11 resulting in model 3 (M3) not exceeding the threshold of the comparative fit indices. In view of the lack of adjustment of the indexes, those items with high modification indexes (MI) were eliminated in order to have better indexes and an adequate factorial structure. This enables to obtain a model 4 (M4) based on 15 items with an adequate absolute fit index (CMIN/DF=2.24) and an appropriate comparative fit index higher than 0.90 (CFI=0.92; TLI=0.91), in addition, a RMSEA equal to 0.07 (RMSEA <0.08) was observed with a lower limit equal to 0.06 and an upper limit equal to 0.08, based on a confidence interval equal to 90 %.

Figure 1

Confirmatory Factor Analysis of the EPEE model (n2=253)
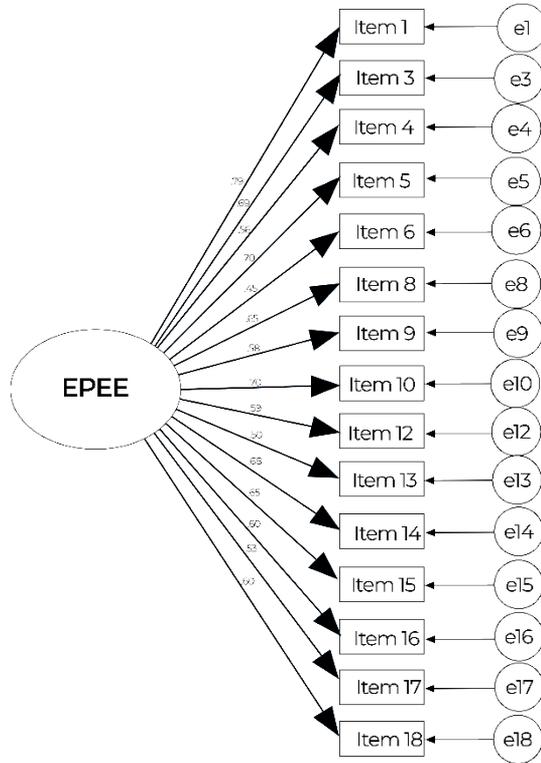
Table 5

Goodness-of-fit index of the extracted models (n_2=253)

Model	Covariances	Absolute adjustment			Comparative adjustment		RM-SEA***	RMSEA 90 % CI****	
		CMIN	DF	CMIN/DF	CFI*	TLI**		LI	LS
M1	20 items without covariance	451.85	170	2.66	0.86	0.84	0.08	0.07	0.09
M2	6<->7; 18<->20	415.22	168	2.47	0.88	0.86	0.08	0.07	0.09
M3	6<->7; 10<->11; 18<->20	398.68	167	2.39	0.88	0.87	0.07	0.07	0.08
M4	15 items without covariance	201.93	90	2.24	0.92	0.91	0.07	0.06	0.08

Note. *Comparative fit index; **Tucker-Lewis index; ***Mean squared approximation error; ****Confidence interval; LI=Lower limit; LS=Upper limit.

Conclusions and discussion

The study enabled to design and validate an entrepreneurial sustainability scale (EPEE), by obtaining adequate goodness-of-fit indicators for model 4 with 15 items. First, the α and ω reliability scores are adequate, which reached the pre-established statistical standards of reliability (Cronbach, 1951; Streiner, 2003; Viladrich *et al.*, 2017). In addition, the EPEE revealed an adequate and robust internal structure according to the parameters (Pérez and Medrano, 2010); it is adequate in the sense of having commensurate and adequate values as suggested by the scientific literature (Escobedo *et al.*, 2016; Kaiser, 1970, 1974).

The EPEE has an efficient factorial structure (Pérez and Medrano, 2010), by having adequate goodness-of-fit indexes, complying with the indexes and parameters presented in relation to the absolute index (CMIN/DF<3), comparative (CFI>0.90 and TLI>0.90) and an adequate mean square error of approximation (RMSEA<0.08) (Chau, 1997; Escobedo *et al.*, 2016; Loehlin and Beaujean, 2017). In such sense, this factor structure is similar to previously identified instrument structures (Carraher, 2013; Schjoedt and Shaver, 2012) and disagrees with multifactorial instruments suited to certain contexts that measure entrepreneurship (Daud *et al.*, 2019; Davari and Rezazadeh, 2015; de Souza *et al.*, 2013; Helm and Andersson, 2010; Hornsby *et al.*, 2002; Kannampuzha and Hockerts, 2019; Nájera *et al.*, 2018; Saptono *et al.*, 2018; Steyn and de Bruin, 2018) but does not assess entrepreneurship endurance.

There are instruments developed in various contexts linked to the concept of entrepreneurship, such as those that measure entrepreneurial traits (Daud *et al.*, 2019), entrepreneurship (Davari and Rezazadeh, 2015; Hornsby *et al.*, 2002; Steyn and de Bruin, 2018), entrepreneurial attitude (de Souza *et al.*, 2013; Lopes and Souza, 2005), entrepreneurial intention (Martinez-Gregorio and Oliver, 2022), entrepreneurship model (Nájera *et al.*, 2018), affective domain of entrepreneurial learning (Saptono *et al.*, 2018), locus of control of entrepreneurship (Schjoedt and Shaver, 2012) and entrepreneurship itself (Vendrig *et al.*, 2021).

Of all those instruments discussed above, more instruments measuring social entrepreneurship with adequate psychometric properties were found (Capella-Peris *et al.*, 2020; Carraher, 2013; García-González *et al.*, 2020; Helm and Andersson, 2010; Sharifi-Tehrani *et al.*, 2022).

Having an adequate structure to measure the sustainability of entrepreneurship (EPEE) and not having instruments that contribute to adequately measure this construct, it is evident that this study attempts to fill this knowledge gap but opens the need to study extensively the sustainability of entrepreneurship, in the sense that instruments should be built from other theoretical and empirical approaches, which help to make better decisions regarding intrinsic and extrinsic factors related to the sustainability of a business in the entrepreneurial market. In addition, it is recommended to take with caution the present scale since it measures the durability in Micro, Small and Medium Enterprises with certain characteristics previously presented, so it is necessary to develop a scale to measure the sustainability of a venture in large companies, which allows to know which are the factors that contribute to the sustainability of the venture in a certain economic sector.

In conclusion, having an adequate reliability of α and ω, in addition, adequate parameters of goodness of fit, absolute and comparative indices, and an adequate mean square error of approximation, it is corroborated that model 4 with 15 items is the most appropriate to measure the sustainability of entrepreneurship, so that the scale can be used to measure the sustainability in Micro, Small and Medium Enterprises.

References

Acuña, E. L. (2021). Emprendimiento y resiliencia: Caso de las bodegas de barrio en el Perú durante la pandemia de covid-19. *Desde el Sur*, *13*(1), 1-18. https://doi.org/10.21142/DES-1301-2021-0012

Ahuja, G. and Novelli, E. (2017). Redirecting research efforts on the diversification–performance linkage: the search for synergy. *Academy of Management Annals*, *11*(1), 342-390. https://doi.org/10.5465/annals.2014.0079

Alberca, P. and Parte, L. (2013). Evaluación de la eficiencia y la productividad en el sector hotelero español: Un análisis regional. *Investigaciones Europeas de Dirección y Economía de la Empresa*, *19*(2), 102-111. https://doi.org/10.1016/j.iedee.2012.10.004

Almaraz, A. (2020). Perdurability, families, and internationalization processes: Approaches from business history in Latin America. *Journal of Evolutionary Studies in Business*, *5*(2), 1-32. https://doi.org/10.1344/jesb2020.2.j075

Ato, M., López-García, J. J. and Benavente, A. (2013). Un sistema de clasificación de los diseños de investigación en psicología. *Anales de Psicología*, *29*(3), 1038-1059. https://doi.org/10.6018/analesps.29.3.178511

Ávalo, J. A., Yagüe, J. L. and Cangahuala, G. (2016). El capital social y la planificación adaptativa en una comunidad industrial innovadora del Perú. *Estudios Gerenciales*, *32*(139), 162-169. https://doi.org/10.1016/j.estger.2016.05.001

Capella-Peris, C., Gil-Gómez, J., Martí-Puig, M. and Ruiz-Bernardo, P. (2020). Development and validation of a scale to assess social entrepreneurship competency in Higher Education. *Journal of Social Entrepreneurship*, *11*(1), 23-39. https://doi.org/10.1080/19420676.2018.1545686

Carraher, S. M. (2013). ISI, social entrepreneurship, and research. *Journal of Management History*, *19*(1). https://doi.org/10.1108/jmh.2013.15819aaa.001

Castillo, M. L. (2018). Perdurabilidad empresarial: Acercamiento teórico. *Revista ESPACIOS*, *39*(48). https://bit.ly/3Kj2G7L

Cerón, K. and Torres, L. F. (2017). *Estudio sobre la perdurabilidad de emprendimientos empresariales de la ciudad de Cali.* (Trabajo de licenciatura). Fundación Universitaria Católica Lumen Gentium, Cali, Colombia. https://bit.ly/3wxGp09

Chau, P. Y. K. (1997). Reexamining a Model for Evaluating Information Center Success Using a Structural Equation Modeling Approach. *Decision Sciences*, *28*(2), 309-334. https://doi.org/10.1111/j.1540-5915.1997.tb01313.x

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*(3), 297-334. https://doi.org/10.1007/BF02310555

Daud, S. N., Ismail, N. A., Abdullah, M. and Hassan, N. A. (2019). Entrepreneurship traits among engineering students: Instrument development and validation procedure using structural equation modeling. *International Journal of Advanced Trends in Computer Science and Engineering*, *8*(2), 235-240. https://doi.org/10.30534/ijatcse/2019/21822019

Davari, A. and Rezazadeh, A. (2015). Toward the measurement of alliance entrepreneurship: Initial scale development and validation. *International Journal of Management and Enterprise Development*, *14*(2), 103-125. https://doi.org/10.1504/IJMED.2015.070094

Daza, J. (2016). Crecimiento y rentabilidad empresarial en el sector industrial brasileño. *Contaduría y Administración*, *61*(2), 266-282. https://doi.org/10.1016/j.cya.2015.12.001

De la Garza, M. T., Zavala, M. A. and López, J. A. (2017). Competencias del emprendedor y su impacto en el desempeño organizacional. *Universidad & Empresa*, *19*(33), 53. https://doi.org/10.12804/revistas.urosario.edu.co/empresa/a.4811

de Souza, E. C. L., Lopez, G. S., Jr., Bornia, A. C. and Alves, L. R. R. (2013). Entrepreneurship attitude: Validation of a measurement instrument based on graded response model of the item response theory. *Revista de Administracao Mackenzie*, *14*(5), 230-251. https://doi.org/10.1590/S1678-69712013000500009

Erken, H., Donselaar, P. and Thurik, R. (2018). Total factor productivity and the role of entrepreneurship. *The Journal of Technology Transfer*, *43*(6), 1493-1521. https://doi.org/10.1007/s10961-016-9504-5

Escobedo, M. T., Hernández, J. A., Estebané, V. and Martínez, G. (2016). Modelos de ecuaciones estructurales: Características, fases, construcción, aplicación y resultados. *Ciencia & Trabajo*, *18*(55), 16-22. https://doi.org/10.4067/S0718-24492016000100004

Fang, Z., Razzaq, A., Mohsin, M. and Irfan, M. (2022). Spatial spillovers and threshold effects of internet development and entrepreneurship on green innovation efficiency in China. *Technology in Society*, *68*, 101844. https://doi.org/10.1016/j.techsoc.2021.101844

Fernández-Pérez, V., Montes-Merino, A., Rodríguez-Ariza, L. and Galicia, P. E. A. (2019). Emotional competencies and cognitive antecedents in shaping student's entrepreneurial intention: The moderating role of entrepreneurship education. *International Entrepreneurship and Management Journal*, *15*(1), 281-305. https://doi.org/10.1007/s11365-017-0438-7

Flores, G. A., Parra, J. C. and Reyes, M. Á. (2017). Cómo algunas barreras y cargas afectan la actividad emprendedora motivada por oportunidad y necesidad. *PODIUM*, *32*, 44-60. https://doi.org/10.31095/podium.2017.32.4

García-González, A., Ramírez-Montoya, M. S., León, G. D. and Aragón, S. (2020). El emprendimien-

to social como una competencia transversal: Construcción y validación de un instrumento de valoración en el contexto universitario. *REVESCO. Revista de Estudios Cooperativos*, *136*, e71862. https://doi.org/10.5209/reve.71862

García-Hernández, Y., García-Rojas, J. A., Ramírez-Sabino, A. I. and Amador-Martínez, M. de L. (2020). Formación académica e iniciativa emprendedora de los estudiantes de educación superior tecnológica. *PODIUM*, *38*, 123-138. https://doi.org/10.31095/podium.2020.38.8

García-Pérez de Lema, D., Gálvez-Albarracín, E. J. and Maldonado-Guzmán, G. (2016). Efecto de la innovación en el crecimiento y el desempeño de las Mipymes de la Alianza del Pacífico. Un estudio empírico. *Estudios Gerenciales*, *32*(141), 326-335. https://doi.org/10.1016/j.estger.2016.07.003

Guerrero, M., Urbano, D. and Gajón, E. (2020). Entrepreneurial university ecosystems and graduates' career patterns: Do entrepreneurship education programmes and university business incubators matter? *Journal of Management Development*, *39*(5), 753-775. https://doi.org/10.1108/JMD-10-2019-0439

Helm, S. T. and Andersson, F. O. (2010). Beyond Taxonomy an empirical validation of social entrepreneurship in the nonprofit sector. *Nonprofit Management and Leadership*, *20*(3), 259-276. https://doi.org/10.1002/nml.253

Hornsby, J. S., Kuratko, D. F. and Zahra, S. A. (2002). Middle managers' perception of the internal environment for corporate entrepreneurship: Assessing a measurement scale. *Journal of Business Venturing*, *17*(3), 253-273. https://doi.org/10.1016/S0883-9026(00)00059-8

Kaiser, H. F. (1970). A second generation little jiffy. *Psychometrika*, *35*(4), 401-415. https://doi.org/10.1007/BF02291817

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31-36. https://doi.org/10.1007/BF02291575

Kannampuzha, M. and Hockerts, K. (2019). Organizational social entrepreneurship: Scale development and validation. *Social Enterprise Journal*, *15*(3), 290-319. https://doi.org/10.1108/SEJ-06-2018-0047

Korpysa, J. (2020). Entrepreneurial management of SMEs. *Procedia Computer Science*, *176*, 3466-3475. https://doi.org/10.1016/j.procs.2020.09.050

León-Mendoza, J. C. (2019). Emprendimiento empresarial y crecimiento económico en Perú. *Estudios Gerenciales*, 429-439. https://doi.org/10.18046/j.estger.2019.153.3331

Loehlin, J. C. and Beaujean, A. A. (2017). *Latent variable models: An introduction to factor, path, and structural equation analysis*. Routledge.

Lopes, G. S. and Souza, E. C. L. (2005). Atitude empreendedora em proprietários-gerentes de pequenas empresas: Construção de um instrumento de medida. *Revista Eletrônica de Administração*, *11*(6). https://bit.ly/3pGVedb

López, L. M., Parra, M. and Rubio, G. (2019). Habilidades gerenciales y su relación con la perdurabilidad de las empresas: Estudios de caso empíricos en Florencia e Ibagué (Colombia). *Espacios*, *40*(11), 5. https://bit.ly/3TqLl0H

Lupiáñez, L., López-Cózar, C. and Priede, T. (2017). El capital intelectual y el capital emprendedor como impulsores del crecimiento económico regional. *Cuadernos de Economía*, *40*(114), 223-235. https://doi.org/10.1016/j.cesjef.2016.09.005

Machmud, S. and Sidharta, I. (2016). Entrepreneurial motivation and business performance of SMEs in the SUCI Clothing Center, Bandung, Indonesia. *DLSU Business & Economics Review*, *25*(2), 63-78.

Martínez-Gregorio, S., Badenes-Ribera, L. and Oliver, A. (2021). Effect of entrepreneurship education on entrepreneurship intention and related outcomes in educational contexts: A meta-analysis. *The International Journal of Management Education*, *19*(3), 100545. https://doi.org/10.1016/j.ijme.2021.100545

Martínez-Gregorio, S. and Oliver, A. (2022). Measuring entrepreneurship intention in secondary education: validation of the Entrepreneurial Intention Questionnaire. *Journal of Psychoeducational Assessment*, *0*(0), 1-15. https://doi.org/10.1177/07342829211069222

Méndez-Picazo, M. T., Galindo-Martín, M. A. and Castaño-Martínez, M. S. (2021). Effects of sociocultural and economic factors on social entrepreneurship and sustainable development. *Journal of Innovation & Knowledge*, *6*(2), 69-77. https://doi.org/10.1016/j.jik.2020.06.001

Meneses, L. I. and Gómez, M. A. (2014). *Indicador de perdurabilidad empresarial aplicado a las empresas con mejor posicionamiento en Colombia desde 1999 a 2011*. (Tesis de grado de maestría). Universidad del Rosario, Bogotá. https://doi.org/10.48713/10336_8883

Molina, P. A., Botero, S. and Montoya, J. N. (2016). Family business: Concepts and models for analysis. *Revista científica Pensamiento y*

Gestión, *41*, 116-149. https://doi.org/10.14482/pege.41.9704

Möller-Recondo, C. and D´Amato, J.-P. (2020). New genius-entrepreneurs: Itinerary and trajectories of university educational excellence. *Comunicar*, *28*(64), 73-83. https://doi.org/10.3916/C64-2020-07

Murray, F. and Stern, S. (2015). Linking and leveraging. *Science*, *348*(6240), 1203-1203. https://doi.org/10.1126/science.aac5843

Nájera, T. V., Lascano, L. F. and Padilla, M. P. (2018). Modelo de emprendimiento universitario para PYMES: Validación de constructo a partir de métodos estadísticos multivariantes. *Revista Publicando*, *5*(15), 18-36. https://bit.ly/3Kn2dkW

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments, & Computers*, *32*(3), 396-402. https://doi.org/10.3758/BF03200807

Pérez, E. R. and Medrano, L. (2010). Análisis factorial exploratorio: bases conceptuales y metodológicas. *Revista Argentina de Ciencias del Comportamiento*, *2*(1), 58-66.

Prada-Villamizar, S. and Sánchez-Peinado, E. (2021). Entrepreneurship, innovation, and internationalization: The moderating role of the institutions. *Estudios Gerenciales*, 506-517. https://doi.org/10.18046/j.estger.2021.160.4307

Pulgarin-Molina, S. A. and Rivera-Rodriguez, H. A. (2007). La perdurabilidad organizacional: Un fenómeno explicable desde la biología, la economía y la dirección estratégica de la empresa. *Revista INVI*, *1*, 51-66.

Quiñones, P. A., Velásquez, N. P. and Hernández, A. (2014). *Perdurabilidad empresarial: concepto y significados*. (Tesis de grado). Universidad del Rosario, Bogotá, Colombia. https://bit.ly/3PPilNk

Restrepo, L. F., Vélez, R., Méndez, C. E., Rivera, H. A. and Mendoza, L. (2009). *Aproximación a una metodología para la identificación de componentes que crean condiciones para la perdurabilidad en empresas colombianas*. Editorial Universidad del Rosario. https://doi.org/10.48713/10336_3781

Rivera, H. A., Guzmán, A., Bernardo, J., Beltrán, A. and Méndez, D. A. (2006). *Indicador de perdurabilidad empresarial*. Centro Editorial Universidad del Rosario. https://doi.org/10.48713/10336_3842

Sánchez, J., Martín, S., Bel Durán, P. and Lejarriaga, G. (2018). Educación y formación en emprendimiento social: Características y creación de valor social sostenible en proyectos de emprendimiento social. *REVESCO. Revista de Estudios Cooperativos*, *129*, 16-38. https://doi.org/10.5209/REVE.62492

Saptono, A., Suparno and Najah, S. (2018). Development of an assessment instrument of affective domain for entrepreneurship in senior high school. *Journal of Entrepreneurship Education*, *21*(4). https://bit.ly/3RkPiSY

Schjoedt, L. and Shaver, K. G. (2012). Development and validation of a locus of control scale for the entrepreneurship domain. *Small Business Economics*, *39*(3), 713-726. https://doi.org/10.1007/s11187-011-9357-0

Sharifi-Tehrani, M., Seyfi, S. and Zaman, M. (2022). At the intersection of tourism social entrepreneurship and empathy: Development and validation of an empathy scale. *Journal of Business Research*, *141*, 433-447. https://doi.org/10.1016/j.jbusres.2021.11.041

Silveira-Pérez, Y., Cabeza-Pullés, D. and Fernández-Pérez, V. (2016). Emprendimiento: Perspectiva cubana en la creación de empresas familiares. *European Research on Management and Business Economics*, *22*(2), 70-77. https://doi.org/10.1016/j.iedee.2015.10.008

Soria-Barreto, K., Rueda, J. F. and Ruiz, R. R. (2021). Factores determinantes del emprendimiento en Chile y Colombia. *Revista Venezolana de Gerencia*, *26*(5 Edición Especial), 459-477. https://doi.org/10.52080/rvgluz.26.e5.30

Steyn, R. and de Bruin, G. P. (2018). The structural validity and measurement invariance across gender of the brief corporate entrepreneurship assessment instrument. *South African Journal of Economic and Management Sciences*, *21*(1), a3421. https://doi.org/10.4102/sajems.v21i1.1965

Streiner, D. L. (2003). Starting at the beginning: an introduction to Coefficient Alpha and Internal Consistency. *Journal of Personality Assessment*, *80*(1), 99-103. https://doi.org/10.1207/S15327752JPA8001_18

Texis, M., Ramírez, M. and Aguilar, J. G. (2016). Microempresas de base social y sus posibilidades de supervivencia. *Contaduría y Administración*, *61*(3), 551-567. https://doi.org/10.1016/j.cya.2015.04.001

Vélez, Á., Restrepo, L., Garzón, M. and Méndez, C. (2005). *Protocolo de investigación, Grupo de perdurabilidad Empresarial*. Facultad de Administración, Universidad del Rosario.

Vendrig, L., Wijnvoord, L., van Nassau, F. and Schaafsma, F. (2021). Does an entrepreneur run the risk of developing stress due to unsui-

tability as an entrepreneur? Validation of an entrepreneurship scale. *Work*, *70*(1), 187-197. https://doi.org/10.3233/WOR-213564

Viladrich, C., Angulo-Brunet, A. and Doval, E. (2017). Un viaje alrededor de alfa y omega para estimar la fiabilidad de consistencia interna. *Anales de Psicología*, *33*(3), 755. https://doi.org/10.6018/analesps.33.3.268401

Yamada, A., Sakurai, Y. and Ishida, R. (2020). Influence of geographic distribution on real activities manipulation within consolidated companies: Evidence from Japan. *Research in International Business and Finance*, *54*, 101306. https://doi.org/10.1016/j.ribaf.2020.101306

Zijlmans, E. A. O., Tijmstra, J., van der Ark, L. A. and Sijtsma, K. (2018). Item-Score reliability in empirical-data sets and its relationship with other item indices. *Educational and Psychological Measurement*, *78*(6), 998-1020. https://doi.org/10.1177/0013164417728358

Inclusive labor insertion project:
formulation of its organizational management

Methodology

The research paradigm used was interpretative/non-experimental. A computer system allows correlating job competencies with respect to positions and type of applicable disability.
The information emerges from 150 medical-biographical records of individuals with disabilities and is supported by the opinion of experts in both human talent management and disability.

Objective

To consolidate an inclusive organizational management model, based on the 3Cs: Corporation (C1), Clients (C2) and Collaborators (C3).
Each C is a space for integrating the information, where all institutions offer services in favor of people with disabilities.

Introduction

The importance of the research lies in considering the project not from the traditional conception based on the punitive response to the rules, but on the business conviction that considers people with disabilities by their abilities as suitable for a specific job, which is consistent with their levels of Corporate Social Responsibility (CSR).

Result or conclusion 1

The project is currently in a pilot phase in 4 manufacturing companies in Ecuador, which have led their technical teams responsible for human talent management (HR) to confirm whether the positions in which their employees with disabilities

Results or conclusion 2

Once the information from each component has been integrated, the expert system, based on the rules and restrictions provided, identifies the best candidate, which enables an inclusive recruitment process at the corporate level under the protection of its HR.

Result or conclusion 3

The articulation of the components of the administrative management model is the basis for designing the modules of the computer system, providing it with a horizon of planning, socialization and assurance of the inclusion objectives proposed at the company level from its HR.

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Inclusive labor insertion project: formulation of its organizational management

Proyecto de inserción laboral inclusivo: formulación de su gestión organizacional

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Abstract: this article details the formulation of a management model applied to a labor inclusion project for people with disabilities. The aim of this paper is to consolidate an inclusive organizational management model based on the 3Cs: Corporation (C1), Clients (C2) and Colleagues (C3). The methodology triangulates the main information of the company (job profiles, required educational level, necessary behavioral competences), and the people profile (type of disability and educational level) which are the basis of its strategic planning. The main results are the search for evidence and the theoretical contribution that support the project. It also includes a digital platform that manages the three components of the model that allows presenting the strategic elements such as mission, vision, values and quality policy (C1), the management of people profiles with disabilities that correspond to business positions (C2), and the visualization of organizations linked to labor insertion processes in the current working environment (C3). It is concluded that the inclusion project based exclusively on a computer system, even if it is functional would be complete in its intention and scope; thus, by supporting it with organizational management components, it is projected to be in a planning and assurance stage of its objectives.

Keywords: labor inclusion, disability, corporation, clients, competition, inclusive systems, management model, strategic plan.

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Resumen: el artículo detalla la formulación de un modelo de gestión aplicado a un proyecto de inclusión laboral de personas con discapacidad; el objetivo de la investigación es consolidar un modelo de gestión organizacional inclusivo, basado en las 3C: Corporación (C1), Clientes, (C2) y Colaboradores (C3). La metodología triangula información primaria, a nivel de empresa (perfiles de cargo, nivel educativo exigido, competencias conductuales necesarias), y la correspondiente al perfil de las personas (tipo de discapacidad que mantiene, nivel educativo de cada individuo), constituyendo estas en la base de su planificación estratégica. Los resultados incluyen la búsqueda de evidencia y el aporte teórico que sustentan al proyecto, que a su vez incluye una plataforma informática que gestiona los tres componentes del modelo, permitiendo la socialización de elementos estratégicos como misión, visión, valores y política de calidad (C1), la gestión de perfiles de las personas con discapacidad, los correspondientes a los cargos empresariales (C2), y la visualización de las organizaciones vinculadas a procesos de inserción laboral presentes en el medio (C3). La investigación concluye que el proyecto de inclusión basado exclusivamente en un sistema informático, aunque sea funcional, estaría inconcluso en su intención y alcance, y que al nutrirlo de componentes de gestión organizacional se lo proyecta en un horizonte de planificación y de aseguramiento de sus objetivos.

Palabras clave: inclusión laboral, discapacidad, corporación, clientes, competencia, sistemas inclusivos, modelo de gestión, plan estratégico.

Introduction

When addressing issues related to disability, it should be considered that its concepts are dynamic and respond to a historical-cultural context and to current theoretical approaches (Tello, 2022). In this sense, the importance of labor inclusion of people with disabilities according to the Ministry of Labor (2017) in which historically their integration to jobs has been in punitive response to a rule or law, should be modified as a business conviction that considers these audiences for their skills and abilities as suitable for a job position.

On the other hand, organizations, whether they are companies, public bodies, civil society organizations; or according to their classification as public or private; and even by their legal conformation as associations or foundations maintain several issues in common (Paolini and Odriozola, 2019). Among them, being immersed in a social context and relying on their labor forces to privilege their activity. In addition, the cooperative image of the organization and according to Cueva *et al.* (2021) can impact positively or negatively on the opinion of society, which is composed of its potential and actual customers, among others.

Hence, it is important for organizations to strategically manage their internal customers to achieve their objectives (Hernández *et al.*, 2017), and that they maintain a corporate image that offers them orientation and relationship with their external customers, in which case they will have achieved a comparative advantage with their competitors (Novicevic *et al.*, 2011). It is more complex when both segments, labor personnel and organizational image, need to be nurtured by inclusion processes within the framework of corporate social responsibility (CSR). For authors such as Pizan *et al.* (2022), corporate social responsibility (CSR) is a bioethical paradigm that has not yet been consummated. In this sense, it requires a leadership based on values that contributes to the relationship between leaders and coworkers (Leal and Arial, 2021).

For this reason, and in order to build a more egalitarian and just society, it is necessary for organizations to establish indicators that allow a constant review of what they understand by CSR; one of these is to reduce the inequality gap to full participation of people historically excluded from labor action, in line with the proposals of Cecchini (2005) who proposes the necessary disaggregation of social indicators according to the specific and objective conditions of individuals. In this effort for inclusion, special consideration should be given to people with disabilities.

Corporate Social Responsibility in relation to disability

Among the main criteria set forth by international standards and related to corporate social responsibility is the avoidance of any type of discrimination against employees with disabilities, especially in the workplace, whether in their hiring, payment, training, promotions, dismissals or retirements, or in the exercise of their rights to participate in union or political affiliations (SAI, 2008). However, it is important to establish corporate responsibility

programs that make organizations visible in their social contribution to vulnerable sectors, specifically disability, which is increasingly frequent even

at the organizational strategy level as a formula to show one of their competitive advantages (Zárate and Rodríguez, 2014) (see figure 1).

Figure 1

The social inclusion of people with disabilities from the perspective of SR

Identification of Occupational Profiles

Pre-employment Inclusion Process

Inclusive Company Program

Social inclusion of people with disabilities, from the perspective of Social Responsibility.

It is a social responsibility strategy aimed at the business sector, establishing its application in medium and large companies in a territory. This program sensitizes and advises the businessman so that in the processes of labor inclusion the person considers people with disability as suitable to access the organizational process.

Note. Cfr. Zarate and Rodríguez (2014).

Knowing the biographical factors of employees with disabilities, as well as allocating jobs for them, implies maintaining a CSR program internally, where human talent managers develop plans or career plans that benefit their actors and in return the company positions itself as one inclusive (Rodas *et al.*, 2018).

ICT in companies as a support for inclusion

Digital transformation has enabled significant growth for the development of technological solutions focused on different areas of production, improving the quality of products and services in the so-called industry 4.0 (del Val Román, 2016). The social and business spheres also undergo this development, i.e., at the level of inclusion, it has given rise to different prototypes aimed at improving living conditions, and in the case of this study it is known about the progress of the so-called smart solutions applicable to the

employment situation of people with disabilities (González *et al.*, 2021).

ICTs offer innovation in the business management model, especially because of the Internet and mobile applications on people's lifestyles, as well as the effects on corporate reputation. In short, the emergence of digital disruption favors the growth of industry and companies, due to its influence on economic growth, which is highly valued especially in emerging markets (Mihardjo *et al.*, 2019). Technologies at the enterprise level should be seen as integrative tools that create value; thus Aspara *et al.* (2013) in their study on the case of Nokia highlight the possibilities in the interconnection of different business units, in the location of new customers, in the identification of supply channels and in the projection of the desired corporate image.

An example at the local level, which leverages ICTs in line with CSR and inclusion, is the research project "for the educational and labor inclusion of people with disabilities (GTIL) funded by the

Ecuadorian Corporation for the Development of Research and Academia (CEDIA) in 2018. The objective of the project is to develop a labor recommendation system for people with disabilities, based on information technologies that integrate educational simulators that enhance the labor competencies of people in correspondence with existing job positions at the level of vacancies in the Ecuadorian manufacturing industry, according to the sample of participating companies.

This research contributes to the GTIL project, identifying issues that were not considered at the time, including offering a corporate management model and theoretically supporting the architectural structure of the IT platform that manages it. It should be noted that there are similar studies such as those presented by Figueroa *et al.* (2017) who detail the relevance of developing strategic models for IT platforms of various kinds. What is sought is that such systems go from being functional to being sustainable and become tools for the socialization of the corporate image of the corresponding organization.

Inclusion of people with disabilities in the labor market in Ecuador

Globally, although it is considered that any type of disability is a purely social issue and not a determining factor that harms people in their inclusion in the social, cultural or labor aspect, in reality this sector is the most affected by unemployment and underemployment; in short, they make up the largest segment of labor marginalization (García *et al.*, 2017).

There are several programs in Ecuador focused on mitigating and promoting the inclusion of people with disabilities in the social sphere, including those developed by the Government under the protection of the Constitution (2018), its annexed regulations and the various development plans. However, this is still incipient with respect to labor inclusion, postulating that it has not gone beyond public policies that define the right to work under conditions of equal opportunities and the promotion of the capabilities and potential of the subjects.

Table 1 details the inclusion of people with disabilities in the labor market in Ecuador, taking as a reference the records of 2019, since the use of updated information to 2022 for this sector would be biased by the restrictions that still remain for the labor occupation of people with vulnerability since the protocols implemented by the Covid-19 pandemic.

Table 1
People with disabilities in the labor market

Year	People with disabilities (A)	% Increase/ Decrease B(A+1/A)	Labor substitutes C	% Increase/ Decrease D(C/A)
2017	63456		2348	3.70 %
2018	67487	6.35 %	4660	6.91 %
2019	68260	1.15 %	3907	5.72 %

Note. Information extracted from the document: "Statistical summary of disability", issued (CONADIS R. E., 2019).

As can be seen in Table 1, there is an increase of 6.35 % of people with disabilities between 2017 and 2018 and a minimal increase of 1.15 % between 2018 and 2019, mainly due to two factors, the first is the change in the regulation that typifies the classification of people with disabilities, and the second to the lack of monitoring and identification of new people with disabilities. The number of labor substitutes does not intervene in this analysis because they do not enter as subjects of inclusion.

People with disabilities in the labor market by sector

Sector	Inclusion	%
Private	50 626	74.16 %
Public	17 634	25.84 %
TOTAL	68 260	100 %

Note. Information extracted from the document: "Statistical summary of disability" (CONADIS, 2019).

As can be seen in Table 2, there is a great variation between the public and private sectors; the main reason does not depend on the size of the State with respect to the number of workers in the private sector, but rather that the mandatory compliance with the Organic Law on Disabilities governs in the first sector, and in the private sector it could be explained from what is stated by Pico and Torres (2017) due to the lack of application of affirmative action measures and irregularities in compliance with the Reformatory Law to the Labor Code (Quota Law that establishes 4 %).

It is worth mentioning that the most prevalent types of disability in order are: Physical, Intellectual, Auditory, Visual and Psychosocial; and the percentage with the highest concentration belongs to men (CONADIS, 2019).

3Cs model applied to an inclusive labor integration system

It is considered strategic for achieving the purposes of the project of labor inclusion of people with disabilities to take the bases of the 3Cs management model, which allows distinguishing aspects related to C1 (referred to Corporation, which deploys components such as mission, vision, values, key success factors, strategic objectives, management indicators);

C2 (referred to Clients, aimed at identifying both companies that offer job vacancies, and the people with disabilities who enter the IT system with their different competence profiles); and C3, which according to Ohmae (1990) refers to Business Competence. However, for this research, C3 is renamed as Collaborators (which is understood as a space to identify organizations, academic institutions, as well as public or private companies that deploy actions in favor of the inclusion of the disability sector). It is important to note that C3 is increasingly strengthened by what is understood as corporate social responsibility (Figure 2).

The importance of offering a management model to the various labor inclusion programs and projects lies in recognizing different strategic components to make them sustainable over time. One of the main failure causes of inclusion processes is persistence; therefore, strategic planning for the management of the labor inclusion project, in this specific case for the GTIL project, consists not in creating strategies but in programming the strategy already conceived (Mintzberg, 1988). In this case, a strategy based on the articulation between the potentialities and competencies of people with disabilities with respect to the possible positions at various organizations and companies to relate the future with the current conditions (Steiner, 1988).

Figure 2
3C Strategic Plan

Development of a strategic plan based on the 3Cs
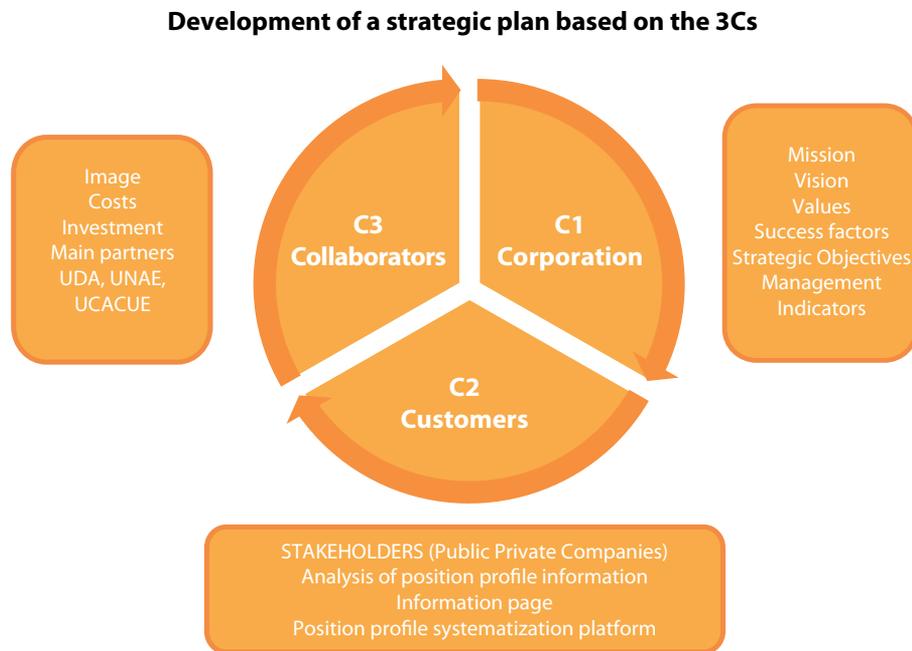
Note. Own elaboration based on Ohmae (1990).

Materials and method

Regarding the GTIL project, the research paradigm used was interpretative/non-experimental, which allowed locating the main inclusion elements of each company through the focus group technique (job profiles and functions to which people with disabilities could aspire), based on the experience in the development of position manuals that the four heads of human talent of the participating companies have.

On the other hand, based on the information on physical, medical and educational aspects and the general competency assessments of each individual, collected through medical records of 150 people with disabilities, the initial state was configured to project the elements of strategic planning (C1); these same data are housed in the computer platform in the C2 Clients component, thus having a pool of potential candidates for the positions identified above.

Correlations are established between probable positions, people's competencies and the type of disability through the in-depth interview with disability experts. These correlations are translated into rules and restrictions that are managed by the system to locate the best candidate, by means of artificial intelligence techniques called expert systems (Lapresta and Panero, 2003; Martínez, 2004). The system offers a job recommendation, which is subsequently reviewed and validated from a non-experimental logic by the human talent management (GTH) analysts of each company (Guba, 1965).

The interpretative paradigm is based on the vision of contemporary authors who study social and educational phenomena such as González (2001) and other classics considered ethnomethodological references such as Blumer, Goffman, Sacks (as cited in Azpurúa, 2005). It is also valued by other researchers of the interpretative in Social Sciences of the stature of Weber (1958)

and Burgardt (2004) for its capacity to order and understand phenomena related to the sociological field.

Project sample. For the primary information, useful for correlating labor competencies with respect to jobs and the type of disability applicable, four experts in disability are selected (one per auditory, visual, intellectual and physical area); 150 medical and biographical records of people with disabilities willing to enter the labor market and four experts in Human Talent Management of companies that offer jobs for this sector.

There are 4 companies participating in the study that belong to the wood, ceramics, rubber and household appliances sectors; these companies were selected because they have the largest number of people with disabilities in their workforce and because their organizational management systems are properly planned and structured; due to confidentiality they are not named.

For the development of the strategic planning elements, which complement the initial project as a proposal, providing it with a horizon for plan-

ning, socialization and assurance of its objectives, participatory action research was used as a work paradigm, which includes four phases: knowledge of the study phenomenon, project planning, execution of the plan and permanent reflection of the phenomenon (Colmenares, 2012). The first two phases are presented in this research, the knowledge of the phenomenon given by previous information, and the strategic components at the level of the 3Cs.

Results

Two large blocks are presented, the first on the previous information gathered from the GTIL project and the second on the deployment of each strategic component of the 3C model.

Deployment of previous information, inputs for environmental analysis and development of the strategic phase

Based on the competence dictionary of Alles (2007), Table 3 presents the 24 job competencies most known by the group of experts:

Table 3
Job competencies known by experts

1. Reading Comprehension	7. Idea generation	13. Analytical thinking	19. Information gathering
2. Adaptability / Flexibility	8. Relationship building	14. Spoken	20. Negotiation
3. Fault detection	9. Installation	15. Equipment maintenance	21. Repair
4. Writing	10. Organization of information	16. Planning	22. Decision making
5. Assertiveness/Strength	11. Active listening	17. Leadership	23. Persuasion
6. Product inspection	12. Management of material resources	18. Operation and Control	24. Equipment selection

Considering the labor competencies mostly noticed for an effective labor action related to the types of disability, it is evident that there is a lower probability of developing labor competencies when there is intellectual disability. There

is more possibility of developing competencies in people with hearing disabilities, followed by physical disabilities and, to a lesser extent, visual disabilities (Figure 3).

Figure 3

*Table of relationships between type of disability/job skills*
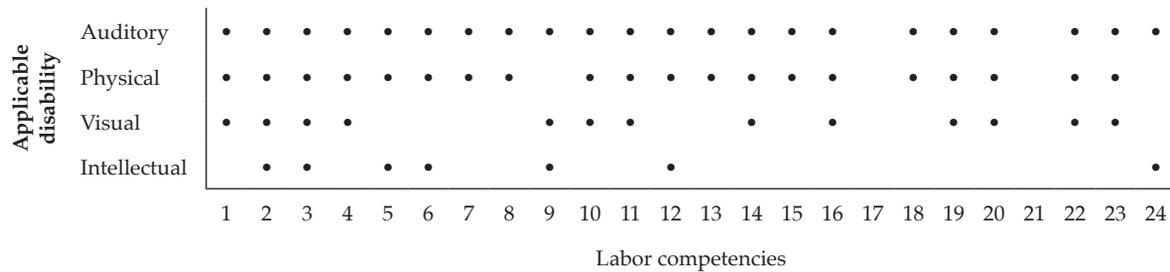
It is observed that the development of competencies is related to the type of disability, so it is assumed that people with multiple disabilities will be even less likely to develop.

Figure 4

Position/job skills relationship
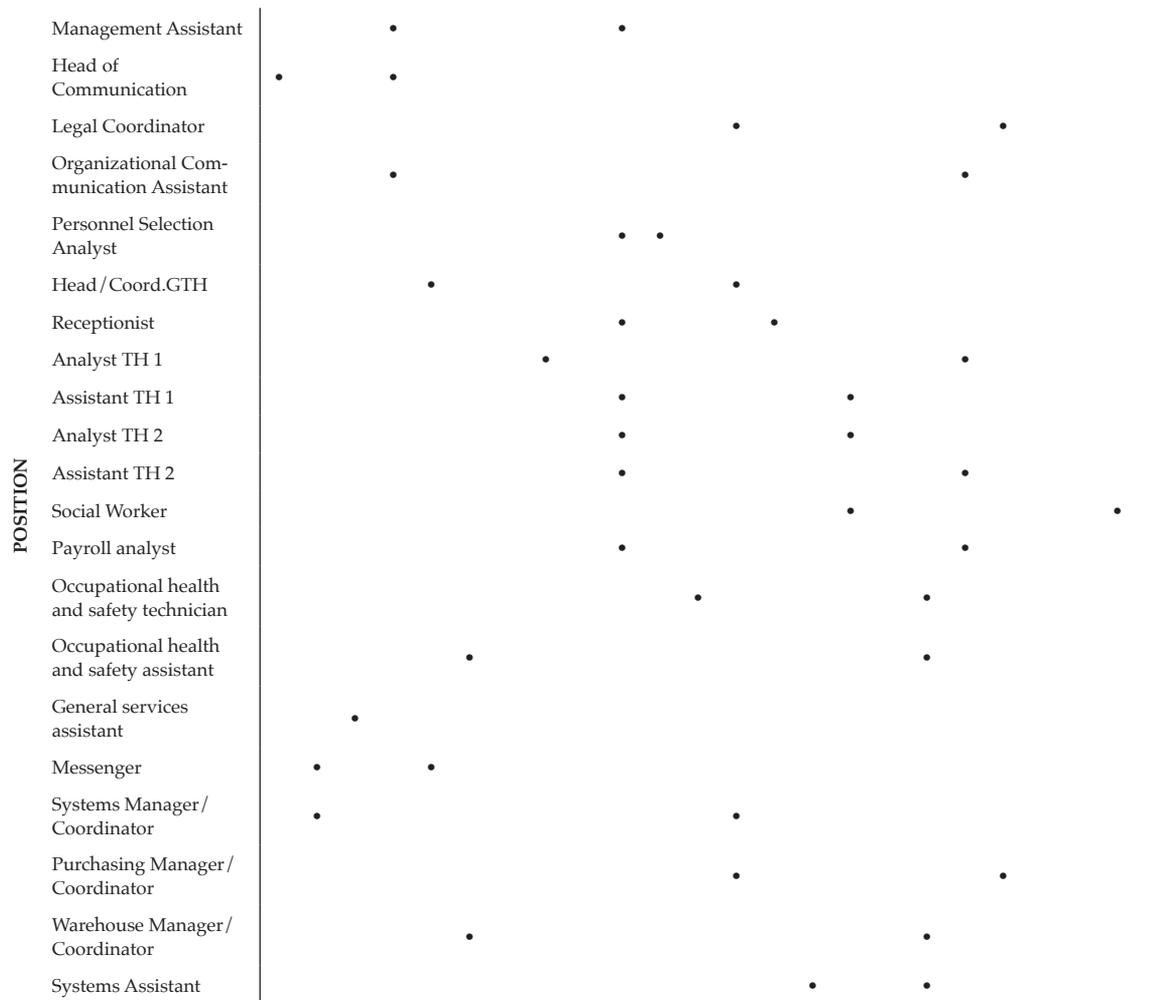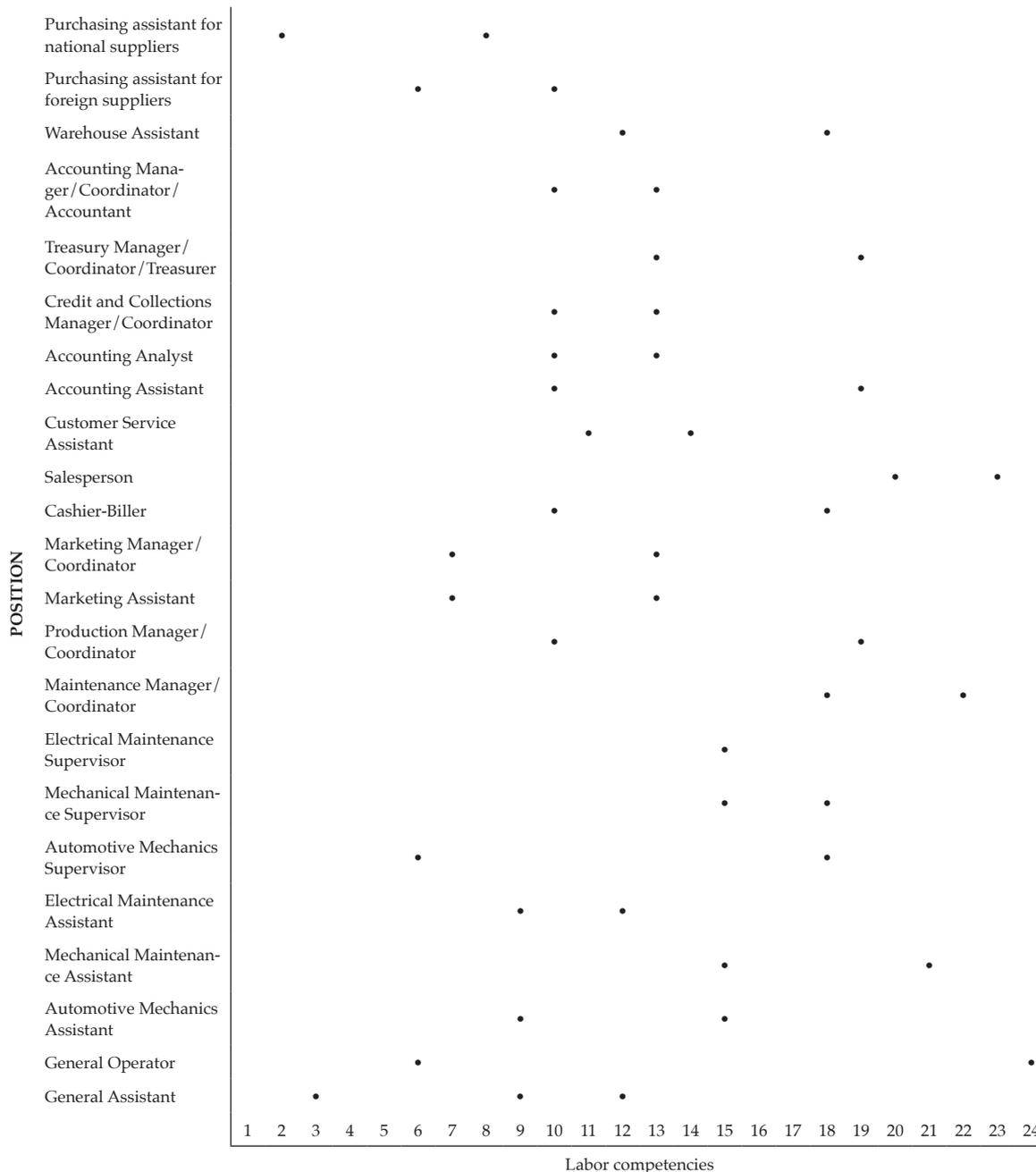
The figure shows the relationship of labor competencies with respect to the positions subject to personnel with disabilities. According to the criteria of experts in disability and those responsible for human talent management, there are positions of various hierarchies that can be occupied by people with disabilities; therefore, it is not a radical limitation to have or not a disability to occupy managerial, supervisory or operational positions. For evaluating positions, in addition to the requirements of the position focused on data such as studies and experience, the skills that are subject to an exhaustive review in the case of individuals with disabilities are those shown in Figure 4. For example, in the case of a receptionist position, the skills to be evaluated from

an occupational perspective are competencies 10 (information management) and 14 (speech skills), reason for which Arroyo (2009) proposes to maintain an active forum for the constant review of professional competencies for the promotion of labor inclusion.

Results of strategic components C1, C2 and C3

The results of the development of the components are integrated as information within the computer platform created for this purpose, so that the study is not limited to a theoretical contribution, but involves an instituted social praxis.

Corporation (C1)

Mission obtained. GTIL is a pioneer scientific group in the development of inclusive technologies for the labor insertion of people with disabilities, from a Corporate Social Responsibility approach.

Vision achieved. By 2030 we will be leaders in the design and implementation of intelligent systems that offer platforms for the labor management of people with disabilities.

Our values are based on the concept of Common Good.

Strategic issues

- Management of labor and occupational inclusion processes.
- Human talent management, based on the 3Cs and CSR.
- Management of technological innovation, based on intelligent systems.

Quality policy. Our continuous improvement processes are necessary because people with disabilities go beyond the concept of customer, they are our reason for being; hence, we seek to improve their living conditions by integrating them into the productive environment. And inclusive companies are our allies and we are committed to their CSR programs.

Quality indicators

I1. Increase the number of inclusive CSR programs in the country.
I2. Increase the number of people with disabilities in operational-technical, supervisory and managerial positions.
I3. Increase the number of job skills training programs for people with disabilities.

The elements presented above correspond to the information of the first component C1. The GTIL platform visually displays each component with its elements. Figure 5 of the platform presents its deployment.

Figure 5
Basic elements of corporate level C1. It only applies to GTIL group

| Working Group for the Educational and Labor Inclusion of People with Disabilities (GTIL)				
GTIL *Technology platform*	C1 Inclusion group		C2. Customers	C3. Collaborators
	Mission			
	Vision			
	Values			
	Policy			

Customers (C2)

Once the corporate base C1 of the GTIL Inclusion Group has been built, we proceed to the development of the second C, which maintains two differentiated segments in the computer platform; the first one for the company and the second one for people with disabilities. These allow identifying positions and competencies, respectively.

At the company level, the computer module enables the creation of specifications such as:

- Departments: the departments that correspond to the company that wish to participate in the labor inclusion project are detailed.
- Position profiles: the position profiles of each department are established.
- Education level: the education levels of the applicants are detailed according to the type of position.
- Disability: each type of disability to be considered in the labor inclusion project is detailed.

- Competencies: the competencies of each position are specified.
- Behavioral competencies: additional competencies to lead a specific position are specified.
- Experience: the experience established to comply with the job profile is detailed.
- Activities: each of the activities to be developed in the position is detailed.
- Tools: refers to the tools that will be used to develop the activities, whether physical or virtual.
- Forms: each form is generated according to the information entered in each of the items detailed above, so that they can be assembled according to the type of company and position.

Figure 6 details the articulation of the primary information collected by GTIL researchers at the level of the company segment, making it possible to visualize the subsequent correlations at the level of computer modules:

Figure 6

Information gathering module
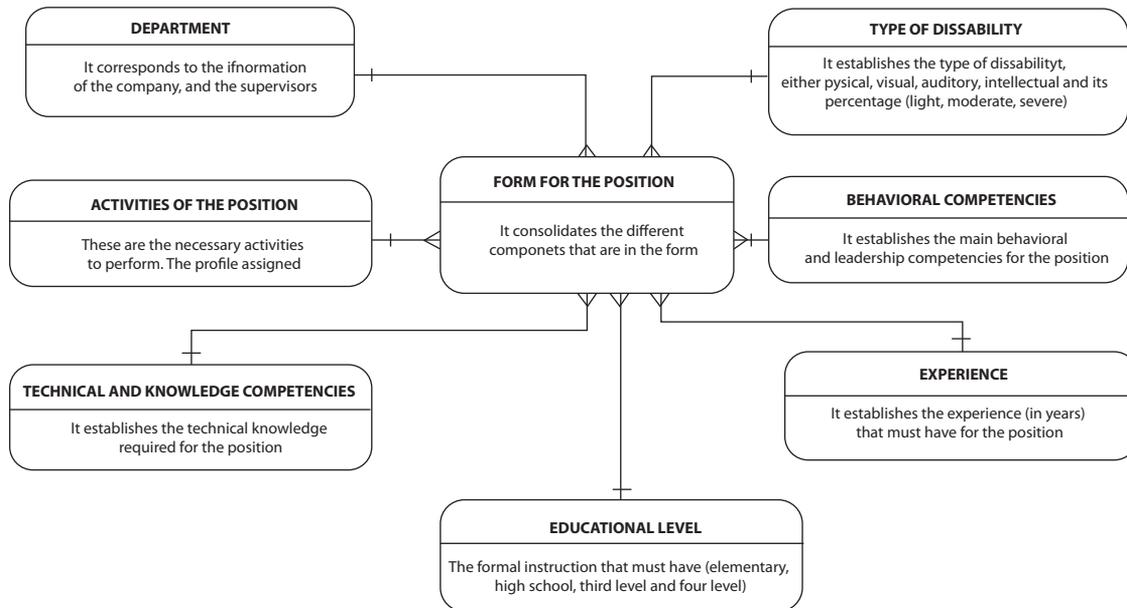
At the individual level. The computer module allows compiling biographical information, type and percentage of disability, and the individual's complete CV (see Figure 7).

Figure 7

Basic elements of corporate level C2. Applies one per customer

Working Group for the Educational and Labor Inclusion of People with Disabilities (GTIL)				
GTIL *Technology platform*	C1 Inclusion group	C2. Customers	C3. Collaborators	
	Mission Vision Values Policy	Human talent guide	People	Register your resume

Collaborators (C3)

At the moment, the project of labor inclusion with people with disabilities is the only project that has been conducted in Ecuador; therefore, there is no segment of its own called competition. In its absence, the third C is considered as Collaborators that correspond to a significant number of public institutions, educational institutions that participate indirectly in the project. For this reason, the computer platform provides a space to describe them and generate synergies in relation to the project.

The following is a list of the main international institutions: International Labor Organization (ILO), World Health Organization (WHO); at the local level, Ministry of Labor, Ministry of Economic and Social Inclusion, Ministry of Labor Relations, Ecuadorian Corporation for the Development of Research and Academia (CEDIA), National Council for the Equality of Disabilities (CONADIS), among others, to visualize the complementary action that underlies the concepts of corporate social responsibility, a section of the computer platform is also dedicated to them. Figure 8 shows its space.

Figure 8

Basic elements of corporate level C3. Applies one per company

| Working Group for the Educational and Labor Inclusion of People with Disabilities (GTIL)			
GTIL Technology platform	C1 Inclusion group	C2 Customers	C3 Collaborators
	Mission Vision Values Policy	Human talent guide	International Labor Organization (ILO) World Health Organization (WHO) University Ecuadorian Corporation for the Development of Research and Academia (CEDIA)

Once the information of each component has been integrated into the expert system, based on the rules and restrictions supplied to it, the best candidate is identified. In the platform, the space is distinguished as the Recommender (Figure 9).

Figure 9

Recommendation. It applies to the best candidate

	C1 **Inclusion group**	C2 **Customers**	C3 **Collaborators**	**Recommender**
GTIL Technology platform	Mission Vision Values Policy	Human talent guide	International Labor Organization (ILO) World Health Organization (WHO) University Ecuadorian Corporation for the Development of Research and Academia (CEDIA)	
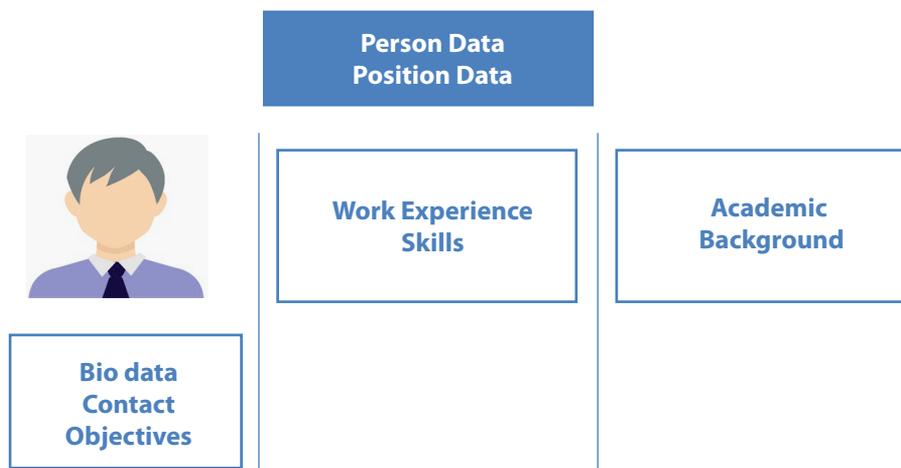
In short, the elements of the system, as spaces for collecting information, correspond to each of the 3Cs, thus in C1 it is constituted by Mission, Vision, Values and Quality Policy; in C2 it is constituted by the human talent guide with specific sections for the company and another for people with disabilities; in C3 it is constituted as a space where all the institutions that offer services in favor of people with disabilities can place their links to generate inclusive labor networks. Currently, the project is in pilot phase in four manufacturing companies of Ecuador, which has led their technical teams responsible for the areas of human talent management (HR) to confirm whether the positions in which their employees with disabilities are integrated are consistent with their biographical and skills profiles. Also, the GTIL project is in a massive socialization phase in MSMEs through the Chamber of Industry, production and employment of the Austro CIPEM

and two projects of doctoral studies are derived from this work. According to García *et al*. (2022), it is necessary that companies, before making any transformation, consider their external environment without neglecting the interests and needs of their own employees, in this case those with disabilities.

Conclusions and discussion

There is an evident constrain in the development processes of labor inclusion projects, mainly propitiated by the bibliography related to organizational management models that seek their studies from the considerations required by people with disabilities. The components of the administrative management model are the basis of projection for designing the modules of the computer system, providing the initial project with a horizon

of planning, socialization and assurance of the proposed inclusion objectives.

Computer systems are based on and provide functional logics, but in many cases they lack corporate logics that project them as systems that not only offer a service, in this case labor information on people with disabilities and positions available at the company level, but also allow understanding the organizational essence of their managers.

There are computer platforms worldwide that favor labor inclusion processes for people with disabilities, being conceived from the perspective of the preparation of competencies and/or labor simulators to acquire them, such is the case of the Discatel project in Spain, according to the Spanish Association of Experts in Customer Relationship (2010). There is no evidence of the development of other expert systems to predict the best candidate for a specific position based on rules and restrictions, because such work has historically been developed manually, although technically by the HR analysts of each company based on their own personnel selection logics. The relevance of having a software that integrates the 3Cs favors the identification in the same source of different actors (companies, people with disabilities, state entities), which would cause links and networking on the purposes of labor inclusion.

Studies such as the one presented by Garay and Carhuancho (2019) show that people with disabilities not only have fewer job opportunities, but are twice as likely to be poorer than those who do not have disabilities. The labor occupation rates of people with disabilities, at present, are not only the result of minimal state and/or private intervention projects, but also they are currently affected by intervening variables, such as the validity of occupational protocols that by Covid-19 restrict access and labor occupation of the sector.

As future lines of research, the GTIL project is currently planning a complementary project focused on the design of simulators for the development of educational and professional competencies of people with disabilities.

References

Asociación Española de Expertos en la Relación con Clientes. (2010). Estudio de las posibilidades del teletrabajo como medio de empleo para personas con discapacidad en la empresa y concretamente en entornos de contact center. https://bit.ly/3QEWdWq

Arroyo, H. V. (2009). La formación de recursos humanos y el desarrollo de competencias para la capacitación en promoción de la salud en América Latina. *Global Health Promotion, 16*(2), 66-72. https://doi.org/10.1177/1757975909104111

Aspara, J., Lamberg, J. A., Laukia, A. and Tikkanen, H. (2013). Corporate business model transformation and inter-organizational cognition: The case of Nokia. *Long range planning, 46*(6), 459-474. https://doi.org/10.1016/j.lrp.2011.06.001

Alles, M. A. (2007). *Desempeño por competencias: evaluación de 360o.* Ediciones Granica SA.

Azpurúa, G. (2005). La Escuela de Chicago. Sus aportes para la investigación en ciencias sociales. Sapiens. *Revista universitaria de investigación, 6*(2), 25-35.

Burgardt, A. (2004). *El aporte de Max Weber a la constitución del paradigma interpretativo en ciencias sociales.* VI Jornadas de Sociología. https://bit.ly/3zPFGZh

Cecchini, S. (2005). *Indicadores sociales en América Latina y el Caribe.* Cepal. http://hdl.handle.net/11362/4735

Colmenares E., A. M. (2012). Investigación-acción participativa: una metodología integradora del conocimiento y la acción. Voces y Silencios. *Revista Latinoamericana de Educación, 3*(1), 102-115. https://doi.org/10.18175/vys3.1.2012.07

CONADIS, R. E. (2019). Consejo Nacional para la Igualdad de Discapacidades. https://bit.ly/2rhtq0A

Constitución de la República del Ecuador. (2018). Constitución de la República del Ecuador. Quito.

Cueva Estrada, J. M., Sumba Nacipucha, N. A. and Delgado Figueroa, S. P. (2021). Marketing social y su incidencia en el comportamiento del consumidor. *Revista Venezolana de Gerencia (RVG), 26*(95), 852-867. https://doi.org/10.19052/rvgluz.27.95.25

Del Val Román, J. L. (2016, marzo). Industria 4.0: la transformación digital de la industria. In Valencia: Conferencia de Directores y Decanos de Ingeniería Informática, Informes CODDII. https://bit.ly/2JvcJdl

Figueroa, G., Paladines, P., Paladines, J., Caicedo, C. and Romero, M. (2017). Modelo de plan estratégico de sistemas para la gestión y organización a través de una plataforma informática (Vol. 1). *3Ciencias.* https://dx.doi.org/10.17993/tics.2017.1

Garay, F. and Carhuancho, I. (2019). Modelo social como alternativa para el desarrollo de la persona con discapacidad, Callao. Perú. *Telos, 21*(3), 681-709. https://doi.org/10.36390/telos213.10

García, E., Orlando, J. and Calle, J. (2017). *Inclusión laboral para personas con discapacidad.* SINAPSIS.

García, Y., González, H., Briseño, A. and Arbizu, M. (2022). Diagnóstico de percepción de responsabilidad social empresarial. Presentación gráfica y propuestas estratégicas: estudio de caso. *Apuntes de Economía y Sociedad, UNAN -León, 3*(1), 69-85. https://doi.org/10.5377/aes.v3i1.14600

González Monteagudo, J. (2001). El paradigma interpretativo en la investigación social y educativa: nuevas respuestas para viejos interrogantes. *Cuestiones pedagógicas, 15,* 227-246. https://bit.ly/3czOsmB

González-Arias, K., Gálvez-Quezada, J., Robles-Bykbaev, V., Bermeo-Zambrano, F. and León-Pesántez, A. (2021, March). An intelligent decision support system for educational inclusion of children with disabilities: an approximation for multidisciplinary teams. En *2021 IEEE World Conference on Engineering Education (EDUNINE)* (pp. 1-6). IEEE. https://doi.org/10.1109/EDUNINE51952.2021.9429110

Guba, E. G. (1965). *Methodological Strategies for Educational Change.* ERIC.

Hernández-Díaz, A., Calderon-Abreu, T., Amador-Dumois, M. and Córdova-Claudio, M. (2017). Internal marketing and customer-contact employees' attitudinal outcomes Marketing interno y las actitudes de los empleados de contacto con los clientes. *Academia Revista Latinoamericana de Administración, 30*(1), 124-143. https://doi.org/10.1108/ARLA-08-2015-0190

Lapresta, J. and Panero, M. (2003). *Extensiones discretas de la regla de borda: Un estudio comparativo.* Asociación Española de Economía Aplicada. https://bit.ly/3BZHWzy

Leal Paredes, M. S. and Arias Ibarra, B. P. (2021). Liderazgo ético para el fortalecimiento de una cultura organizacional en las Pymes. *Podium, 40,* 21-40. http://dx.doi.org/10.31095/podium.2021.40.2

Martínez, M. (2004). Generalizaciones y extensiones de la Regla de Votación de Borda. (Tesis de doc- torado). Universidad de Valladolid. https://doi.org/10.35376/10324/46

Ministerio de Relaciones Labores-CONADIS. (2013). Ministerio del Trabajo. https://bit.ly/3BYXHqt

Ministerio del Trabajo. (30 de noviembre de 2017). Suin-juriscol. https://bit.ly/2SRBguK

Mintzberg, H. (1988). Cómo modelar la estrategia. *Harvard Deusto business review*, (34), 73-84.

Mihardjo, L. Elidjen, D., Alamsjah, F. and Sasmoko, S. (2019). The role of corporate reputation & distinctive organization capability in developing business model innovation: Case study of indonesian ict firms in facing industry resolution 4.0. *Opcion, 34*(86), 2190-2208.

Novicevic, M. M., Duke, A. B., Holmes, E. R., Breland, J. W., Buckley, M. R. and Bing, M. N. (2011). Customers cocreating value with the firm: implications for IHRM. The International *Journal of Human Resource Management, 22*(03), 746-761. https://doi.org/10.1080/09585192.2011.543764

Ohmae, K. (1990). *La mente estratégica.* McGraw Hill.

Paolini, N. A. and Odriozola, J. (2019). *Diferentes tipos de organizaciones. ¿Por qué no todas son iguales?* Series: Libros de Cátedra. https://doi.org/10.35537/10915/75731

Pico Barrionuevo, F. P. and Torres, S. S. (2017). Mejores prácticas empresariales de responsabilidad social en la inclusión de personas con discapacidad. Estudio de caso en empresas de Ambato, Ecuador. *Retos. Revista de Ciencias de la Administración y Economía, 7*(14), 189-200. https://doi.org/10.17163/ret.n14.2017.10

Pizan, E. M., León, D. G. O., Morales, A. J. S. and Figueroa, K. P. R. (2022). Responsabilidad social empresarial: un paradigma bioético no consumado. *Revista de filosofía, 39*(101), 342-357. https://doi.org/10.5281/zenodo.677362

Rodas-Tobar, M., Bernal-Bravo, C., Andrés-Romero, M., Pinos-Figueroa, A., Vidal-Mogrovejo, P., León-Pesántez, A., ... and Pesántez-Avilés, F. (2018). An expert system to support the provisioning of staff with disabilities in industry. En *2018 IEEE Biennial Congress of Argentina (ARGENCON)* (pp. 1-6). IEEE. 10.1109/ARGENCON.2018.8646043

SAI. (2008). Norma SA8000 Responsabilidad Social Internacional.

Steiner, G. (1998). Planificación estratégica, lo que todo director debe saber. En Steiner, G., *Planificación estratégica, lo que todo director debe saber.* CECSA.

Tello-Zuluaga, J. (2022). Educación y discapacidad en el marco de una pandemia: breve revisión.*IPSA Scientia, revista científica*

multidisciplinaria, 7(1), 58-69. https://doi.org/10.25214/27114406.1293

Weber, M. (1958). *Ensayo sobre metodología sociológica.* Amorrortu editores, 3era reimpresión, 1990. Buenos Aires. https://bit.ly/3PhLosx.

Zarate, R. and Rodríguez, D. (2014). Los derechos de las personas en situación de discapacidad: Una respuesta desde la responsabilidad social. *Revista Eleuthera, 10,* 38-57. https://bit.ly/3EczYEl

Basic writing rules

Universidad Politécnica Salesiana del Ecuador

General information

"Retos" is a bilingual scientific publication by the Universidad Politécnica Salesiana de Ecuador, which has been edited on a bi-annual basis since January 2011. The journal focuses on Development and transdisciplinary issues including Public Administration, Social Economics, Marketing, Tourism, Entrepreneurship, Management, Administrative and Economic Science, etc.

It is an arbitrated Scientific Journal that uses an external evaluation system known as *peer-review*, employing *double-blind review*, in accordance with the American Psychological Association (APA) style rules. By using this system, the authors have access to an objective, impartial and transparent review process, which facilitates their publication being included in databases, repositories, and international indexed references.

"Retos" is indexed in the selective directory and catalog of the Online Regional Information System for Scientific Journals in Latin America, the Caribbean, Spain, and Portugal (Latindex), in the REDALYC Scientific Information System, the Directory of Open Access Journals in repositories, libraries, and specialized catalogs in Ibero-America.

The Journal is published with two different editions: printed (ISSN: 1390-62911) and electronic (e-ISSN: 1390-8618), in Spanish and English, and each article is identified with a DOI (Digital Object Identifier System).

Scope and policies

Themes

Original contributions in Development issues, as well as related fields: Public Administration, Social Economics, Marketing, Tourism, Entrepreneurship, Management…and all other disciplines related to the central thematic issue.

Contributions

"Retos" preferably publishes the results of empirical research about Development, written in Spanish and/or English, while reports, studies, and proposals are also accepted, as well as reviews of state-of-the-art literature.

All of the publications must be original, never have been published in any other journal, and not be undergoing any arbitration or publication processes. Contributions to the journal can include any of the following:

- **Research:** 5,000 to 6,500 words of text, including the title, abstracts, keywords, tables, and references.
- **Reports, Studies, and Proposals:** 5,000 to 6,500 words of text, including the title, abstracts, tables, and references.
- **Reviews:** 6,000 to 7,000 words of text, including tables and references. Justified, current, and selective references shall be evaluated, and should include around 70 publications.

"Retos" is published bi-annually (20 articles per year), in April and October, and each edition has two sections with five articles each, the first containing a **Monograph** theme edited by subject matter experts, and a second **Miscellaneous** section, made up of diverse contributions related to the publication's theme.

Presentation, structure, and submission of manuscripts

Papers are to be presented with Arial 10 typeface, single line spacing, all justified, without indentation or blank spaces between paragraphs. A space is only to be included between the major

sections (title, authors, abstracts, keywords, credits, and epigraphs). All margins on each page must be 2 cm.

The papers are to be presented in Microsoft Word format (.doc or .docx), and the file is to be anonymous in the File Properties such that the author(s) is(are) not identified.

Manuscripts are to be submitted only through the OJS (Open Journal System), in which all authors must first register. Original papers sent via email or another interface are not accepted.

Manuscript Structure

For papers that are empirical research, the manuscripts are to follow IMRDC structure, while Notes and Contributions epigraphs are optional. Papers that constitute reports, studies, proposals, and reviews are afforded greater flexibility in terms of epigraphs, especially in relation to Materials and Methods, Analysis and Results, and Discussion and Conclusions. All types of papers are required to include References.

1. **Title (Spanish) / Title (English):** Concise but informative, the first line in Spanish and the second, in English. Maximum 80 characters are accepted, including spaces. The Editorial Board is allowed to propose changes to the author's title.

2. **First and last names:** of each of the authors, organized in order of priority. Maximum three authors are accepted per original paper, although justified exceptions may be allowed, based on the theme, complexity, and length. The names are to be followed by the professional category, workplace, each author's email address and ORCID number. It is mandatory to include whether the author has a doctorate degree (Dr. before the name).

3. **Abstract (Resumen, Spanish) / Abstract (English):** This section can contain a maximum of 230 words, first in Spanish and then in English. The abstract shall concisely contain the following, and in this order: 1) Justification of the theme; 2) Objectives; 3) Methods and sample;

4) Main results; 5) Main conclusions. It should be written impersonally "This paper analyzes..." In the abstract, automatic translation is not accepted due to its poor quality.

4. **Keywords (descriptores, Spanish) / Keywords (English):** Six keywords are to be included for each language, and must be directly related to the paper's theme. This requirement shall be scored based on whether the keywords can be found in the UNESCO Thesaurus.

5. **Introduction and State of the Question:** The section proposes the question, the context of the issue surrounding it, justification, basis, and proposal for the study, using bibliographic references, including the most important up-to-date literature on the theme, both nationally and internationally.

6. **Material and Methods:** This is to be composed in such a way that the reader can easily understand how the research was performed. As appropriate, describe the method, sample, sampling, and refer to the type of statistical analysis used. If it is an original method, present the reasons for applying it, and describe any possible limitations.

7. **Analysis and Results:** This section should seek to highlight the most important observations, and without including any value judgments, describe the methods used. Throughout the text, essential tables and figures shall be included in a logical sequence, without repeating any data.

8. **Discussion and Conclusions:** This section summarizes the most important findings related to any observations from relevant studies, pointing out contributions and limitations, without repeating data from other sections. The discussion and conclusions paragraph is to include inferences and new lines of research for the future.

9. **Contributions and acknowledgment (optional):** The Science Editors Board

recommends that the author(s) specify the financing source for their research. Priority shall be given to work endorsed by competitive national or international projects. Regardless, for the manuscript to be scientifically evaluated, it is to be anonymized with an XXXX only for the initial evaluation, in order to avoid identification of any of the authors or research teams, which are to be named in the Cover Letter and later, in the final manuscript.

10. **Notes** (optional) are included, only if necessary, at the end of the article (before the references). They are to be included manually, since the Word footnotes are not recognized by the layout systems. Note numbers are to be included using superscript, both in the text and in the final note. Notes including simple bibliographic references (without comments) are not allowed, since these are supposed to be included in the references.

11. **References:** Bibliographic references are to follow the text references. Under no circumstances should references be included that have not been cited in the text. There should be enough references in order to contextualize the theoretical framework, and be based on criteria of contemporary relevance and importance. They are presented alphabetically, according to the author's last name (if the last name has more than one word, based on the first word of the last name).

Rules for references

Periodical publications

Journal article (one author) Valdés-Pérez, D. (2016). Incidencia de las técnicas de gestión en la mejora de decisiones administrativas [Impact of Management Techniques on the Improvement of Administrative Decisions]. *Retos*, *12*(6), 199-2013. https://doi.org/10.17163/ret.n12.2016.05

Journal article (up to six authors): Ospina, M.C., Alvarado, S.V., Fefferman, M., & Llanos, D. (2016). Introducción del dossier temático "Infancias y juventudes: violencias, conflictos, memorias y procesos de construcción de paz" [Introduction of the thematic dossier "Infancy and Youth: Violence, Conflicts, Memories and Peace Construction Processes"]. *Universitas*, *25*(14), 91-95. https://doi.org/10.17163/uni.n25.%25x

Journal article (more than six authors): Smith, S.W., Smith, S.L. Pieper, K.M., Yoo, J.H., Ferrys, A.L., Downs, E.,... Bowden, B. (2006). Altruism on American Television: Examining the Amount of, and Context Surronding. Acts of Helping and Sharing. *Journal of Communication*, *56*(4), 707-727. https://doi.org/10.1111/j.1460-2466.2006.00316.x

Journal article (with no DOI). Rodríguez, A. (2007). Desde la promoción de salud mental hacia la promoción de salud: La concepción de lo comunitario en la implementación de proyectos sociales. *Alteridad*, *2*(1), 28-40. (https://goo.gl/zDb3Me) (2017-01-29).

Books and chapters of books

Complete books: Cuéllar, J.C., & Moncada-Paredes, M.C. (2014). *El peso de la deuda externa ecuatoriana*. Quito: Abya-Yala.

Chapters of a book: Zambrano-Quiñones, D. (2015). *El ecoturismo comunitario en Manglaralto y Colonche*. En V.H. Torres (Ed.), Alternativas de Vida: Trece experiencias de desarrollo endógeno en Ecuador (pp. 175-198). Quito: Abya-Yala.

Electronic media

Pérez-Rodríguez, M.A., Ramírez, A., & García-Ruíz, R. (2015). La competencia mediática en educación infantil. Análisis del nivel de desarrollo en España. Universitas Psychologica, 14(2), 619-630. https://doi.org.10.11144/Javeriana.upsy14-2.cmei

All reference that have a DOI (Digital Object Identifier System) must be included in the References (which can be obtained at http://goo.gl/gfruh1). All of the journals and books that do not have a DOI are to appear with a link (to the online version, if available, shortened using Google Shortener: http://goo.gl) and the date of query in said format.

Journal articles are to be listed in English, except for those that are available in Spanish and English, in which case, both languages are to be included in brackets. All internet addresses presented are to be shortened in the manuscript, except for the DOI, which are to be included in the established format (https://doi.org/XXX).

Epigraphs, Tables, and Graphs

The epigraphs in the article's body are in Arabic numbers. These are to avoid all capital letters, underlining, or bold text. Numbering should use maximum three levels: 1. / 1.1. / 1.1.1. A carriage return is to be used at the end of each epigraph.

Tables are to be included in the text in Word format, according to their order of appearance, with Arabic numbering and captioned with a description of their content.

Graphics or figures should be kept to a minimum and incorporated into the text, in accordance with their order of appearance, with Arabic numbers and captions with a short description. Quality should be no less than 300 ppp, if necessary, using TIFF, PNG, or JPEG formats.

Submission process

The papers are to be submitted in two files through the journal's OJS system:

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